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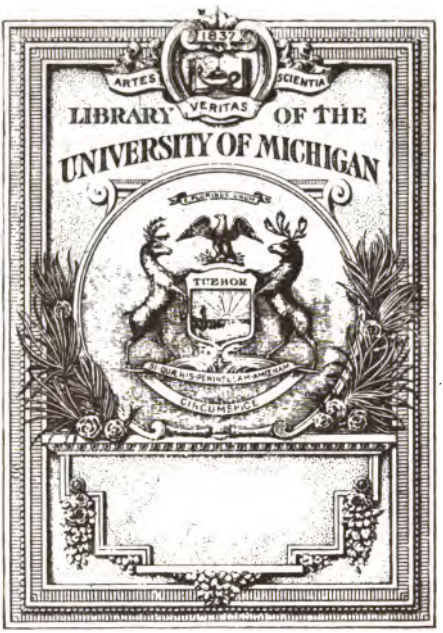

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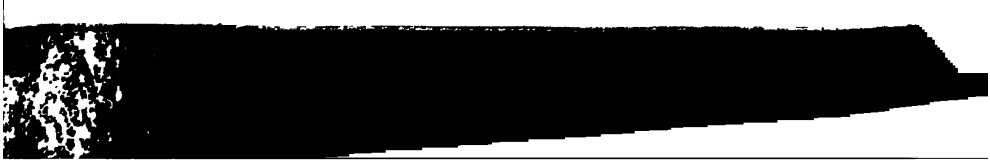

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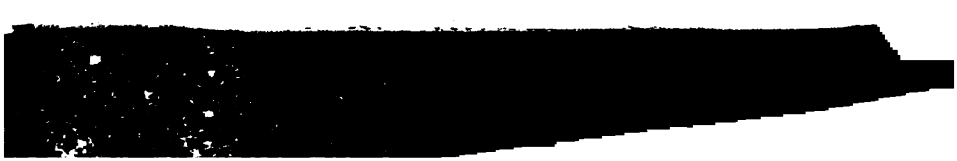


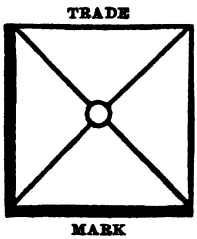
CAN WE BE SURE OF MORTALITY?

A LAWYER'S BRIEF

BY

WM. A. CHENEY

EX-JUDGE OF THE SUPERIOR COURT OF THE STATE OF CALIFORNIA IN AND FOR LOS ANGELES COUNTY



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PREFACE

If it be true that "you are not all included between your hat and your boots," then possibly the residue or individual is not *mortal* after all. One surmises many things about this selfsame individual irrespective of biology, anatomy, or physics in general, and while a surmise is not a datum, it often evolves an experience which results in the acquisition of a fact. Good guessing is second cousin to an hypothesis, especially if based on a fair amount of actuality. Are we sure then that we are mortal? Furthermore, are the professors of exact science quite certain that the individual is annihilated when the body dies as such and goes back to the elements whence it came? The amount that we know is absurdly small compared with that yet unexplained, and the Riddle of the Universe is not so easy of solving as some of our professors may suppose. To be sure, a key is a good thing, and we have one already that unlocks many doors; but on ahead are more and still more closed avenues not yet explored.

The word *science* means to know, this term by its very nature implying the *unknown;* and the scientist is simply a human being conscientiously

dealing with the negatives and positives of possible knowledge. He gropes about in the dark with his torch of a fact, getting glimmers here and there of new data or a law, like the pay streak in ore-bearing rock—that which is seen is but an indication of that which is hid, and only the individual who admits this is worthy the term of scientist. Should we discover the secret of secrets, the final or first principle—the hidden mainspring that once understood would reveal the Universe with all its facts—even then, man, being but human and a victim of time and space, must needs keep busy through eternity, adjusting and relating these infinite data one to the other. There is no danger of a slump in the business of science or the scientific man, for that in which he lives, moves, and has his being is so much bigger than himself that he can never retire from business while time lasts. The living environment in which each individual finds himself submerged forms a sargasso of specialization that compels him to desperately flounder until a grasp on unity is attained. In physics, with its hypothetical atom, he is lost and well-nigh drowned. Not until he discovers a dominant unit guiding and directing its subjects of lesser units does the cosmic balance of things present itself. The word *relationship* is a misnomer unless it really expresses its true meaning. Things chaotically bumping together without let or hindrance, sympathy or mutual understanding, are not in a true sense related. A universe of accidents like this would be without coördination, without harmony, without

inherent unifying law. We know of no such universe. Relationship is an established fact; cosmos and balance are everywhere in evidence. Living things environ and are environed, establishing a true relativity, physically, mentally, and spiritually. Dominant units control lesser units and are in turn controlled by those above them. There is a hierarchy, an ascending scale. All things then are good in their initiative and finality. The Alpha and Omega are absolute and true; only that which goes between presents itself to the partial understanding as Evil; the Ultimates are beyond cavil.

Which is the myth, then, considering our environment and relationships—mortality or immortality? Professor Haeckel claims that immortality is a fable, an old man's dream; but many another scientific witness argues against the myth of mortality, and much of this argument hinges on the fact of consciousness—a problem which staggers the materialistic monist and which he certainly does not solve. An assumption of one infinite eternal substance with innate property of movement, minus eternal differentiation, is no adequate explanation of consciousness. This power of mind being beyond solution, by science either heterodox or orthodox, is also beyond the reach of judgment as to its mortality or otherwise. Therefore, any scientist who would summarily dispose of it is hardly worthy of serious consideration. The miracles which we are asked by orthodox Christianity to believe are simple and childlike compared with the stupendous de-

mand on our credulity made by biology when we are requested to accept the memory of the germ cell, along with its storing capacity for holding intact the complexities of the race memories and impulses, as well as the innumerable physical forms of motion ready to spring into multiform life with the past in consciousness stretching backward to simple plasm. And this cell a divisible cell at that! It may all be truth—no doubt is, but if so, the miracle of immortality or eternity of being is not a hard one to swallow; for such capacity in an invisible cell would stamp it with the hall-mark of continuity. Sterling and indestructible, what else could it be but individual? All men are "as grass"—yes. He "cometh up as a flower" —yes, yes. He is bound to walk over the spot sometime in his life where he will be buried—yes, yes, yes. We have had this dinged into our ears from childhood; funerals have been our nightmares, coffins, lugubrious voices, crape! If there is anything in outer and auto suggestion, we ought to die. Not a shred of the human or divine would be left if mortality *in toto* were an assumed fact. And there is an immense deal in auto and outer suggestion. A sick man can become sicker and sicker by constantly reminding himself in so many words that he is ill; a well man can even make himself sick by the same method. To be sure, we have been informed by priests and philosophers of a possible immortality, but with such long faces, solemn airs, and so many conditions, that the prospect held out is abnormal and unalluring.

If the human world would face about and look at life instead of death; if it would affirm health instead of sickness, the mortality of man would dwindle to insignificance compared with the immortality or eternity of being which is undoubtedly his. Mortality would then resolve itself into a change of environment for the real man as regards his physical structure. As a matter of fact, that change is continually going on, even when he is said to live, death being but a stronger pronouncement in the same direction. We make but little ado about moving from one house to another; why then are we so doleful about this fluidic house of flesh, these colonies of individuals amidst which we dwell? They are a shifting commodity at best, and that stable thing which we call the individual is not necessarily tied to any special order of vitalized being. Besides, this same organized habitat is far more readily maintained in approximate equilibrium when we cease to affirm that it is sick and dying. If one wants to set up a revolution in that thing called his body, creating chaos in the very central system itself, let him suggest continually that order is impossible, and sickness and death have already intruded. Of course we are mortal in so far as we make ourselves so. Were it possible, we would be utterly and irrevocably annihilated, and the very philosophers that teach immortality help man on to this doleful condition—even more so than the "rank materialist" who challenges the immortal with an energy worthy of better things.

"Are we sure of Mortality?" According to the

priest and logician—yes. "All men are mortal." But *what* is a man? As before said, "you are not all included between your hat and your boots." Therefore, in face of the dominant assertions of the ages past, the author of this book has the audacity to ask, Are you sure?

A. E. C.

Chapter I

INTRODUCTION

The assurance with which some writers dealing with biological and kindred topics have asserted the scientifically demonstrated mortality of the individual is a matter of profound astonishment; and being a lawyer by profession, I undertook for my own satisfaction and that of some of my friends the task of writing a brief for the other side. It appeared clearly to me that if any theory or any number of theories could be presented which were consistent with what Science *knows,* and also with the idea of immortality, then the claimed demonstration of man's mortality must necessarily fail. While I was engaged in the preparation of this brief, my attention was called to the recently published opinions of leading scientists upon the question, causing me to adapt my argument to the position taken by them, particularly to that assumed by Professor Haeckel. My reason for selecting the great Zoölogist for the purpose is because he presents the argument for that side of the question with all the force of which it is capable, and he marshals the evidence to its minutest detail. He therefore represents the scientific nonimmortalists.

I am not desirous of assuming an attitude criti-

cal of his scientific attainments in a chosen and special field of thought—far from it. I have found his labors a source of great satisfaction when my mind turned wearily from the sheep-bound books containing the condensed wisdom of jurists; but Professor Haeckel has written a book for the world at large, one which is not a text-book, nor a treatise on his special science.

I have read the work and am one of those for whose benefit it may be presumed it was written. I am one of the human beings whom he would turn adrift on the sea of profound despondency, with the cables of their vessels slipped, and the sails idly slapping the yards and masts.

I therefore have a right to know why he has assumed judicial functions and pronounced the judgment of mortality upon man, what proofs he possesses, why he has loaded down with an extra weight of woe my fellowman who already found life in this world discouraging, disappointing, but who nevertheless kept a smiling face, because it was hopefully turned toward either heaven or some compensating change of environment in the eternities.

The bearer of bad news is never welcome, though that should not prevent a straightforward presentation of science, provided it *be* science, on the part of those men who seem to be set apart for that especial work, neither should we be afraid to face the truth, provided it *be* the truth, though destructive of our ideals.

Who and what are scientists? They are men who at the sacrifice of a generalized life special-

ize the operations of their minds in some chosen field for the purpose of gathering *data, facts;* these they report to the general world of mankind, which constructs therefrom its conclusions. A man may be great as a specialist, as Darwin, Huxley, Haeckel, or he may be great as a generalist, as Herbert Spencer, but he is never great as both, or so rarely that it is difficult to recall the name of one to mind.

Witnesses, even experts, never occupy the bench or the jury box on the trial of an issue of fact; they are respectfully requested to step down if they are to bear witness, and leave the judicial functions to be exercised by others. So Professor Haeckel is a great witness to such data as he has collected in his chosen field, but as judge or jury his conclusions from them, when applied to another and entirely different field, are of no more value than are the reader's or mine.

The absolute negative can be proven never; and if any theory or theories, any hypothesis or hypotheses, any belief or beliefs, can start the projection of their lines of thought where the proof ends, it is sufficient.

The cool nonchalance with which German scientists of a certain school announce as a final conclusion the falsity of the doctrine of the immortality of man would be amusing if it were not for the danger that the mass of busy men may accept their assertion as truth. Judging from the enthusiasm with which they embrace the opportunities to attack it, it would seem almost as if the destruction of this hopeful doctrine was the ob-

jective point to which they were aiming all their researches. There are evidences of this to be found in the fact that by his own admission, an admission upon which he prides himself, Professor Haeckel holds the same opinion now that he did thirty years ago, before the recent progress had been made in biology. Are we to conclude from this that he was a wonderful prophet thirty years ago, or rather that his preconceived notions concerning immortality have caused his conclusions from data to be biased? The vehemence with which the doctrine of immortality is assaulted but emphasizes the importance of the belief to humanity. Either it is exceedingly dangerous to the best interests of humankind, or else those who assail it are. The opinions of specialists are of peculiar value, when expressed concerning matters clearly within the limits of their fields of observation and investigation. Outside of those realms their opinions are but *dicta* and possess no particular worth, and this for the reason that the very concentration along the especial lines of their work causes them to be peculiarly weak in other directions. Darwin said of himself that as he grew older while the capacity for observation in his chosen field of labor increased in power, he completely lost the appreciation of tune, harmony, and all that gives to music its soul-inspiring qualities. All of his marvelous scientific attainment would not therefore qualify him as a judge of music.

A study of the growth, development, complexity, and functions of the brain and nervous system

emphasizes this position. Lines of least resistance are established, facile connections made, and others blocked and frequently inhibited. It is not to be wondered at, then, that a man who spends all his time over the microscope in the study of the egg with its nucleus, polar bodies, and centrosome, or whose energies are altogether given to the chemical analysis of the living machine and its operations, should by such concentration to a perceptible degree incapacitate himself for generalization. Just as difficult is it for a man who is bound by a creed to find truth anywhere outside of his particular form of religion. This is because of the establishment of preferred paths, which become lines of least resistance; the mind operates only along these lines, the other channels are clogged, paralyzed, atrophied, or undeveloped; therefore, anything poured into the brain through the senses seeks these lines and these only. The opinion of the microscopist or the occult chemist concerning the divinity of Christ has no added value from his eminence in his special field of labor, and the opinion of the creed-bound priest as to the office of the centrosome of the cell receives no strength from his clerical calling.

The scientist may consistently demand that you, in opposing him, furnish him with data inconsistent with his apparent science, but he may not with propriety say that science declares your facts untrue, for either his position is not scientific or your declarations are not of facts.

The specialist is not the emperor of the world of thought, he is merely king of his limited mon-

archy. His duty is performed when he has unloaded the things he has discovered and the principles evolved. His only value to the mental world is measured by what he has added to the sum of knowledge; where his contributions fit, how they adapt, and what ethical or religious conclusions are to be drawn from them, are questions better answered by the general constructor than by the specialist himself.

The mountains of wisdom are honeycombed with the old holes once filled with the surveying flag poles of scientists. They, the scientists, are sleepless surveyors; they never fold their hands and cry, "It is finished"; they assume positions, they abandon them, and enable the world of thought to rear new structures upon the ruins of the old. This positive assertion on the part of materialistic or monistic specialists that the world must part with its dream of immortality has a familiar sound. We are all accustomed to the imperious verdict of some scientists; their "cannot be" confronted with the "may be" of ordinary mankind has more than once resulted in an abandonment of position and the acknowledgment "it is." The solar system, aye, the universe, has been constructed on various plans and reconstructed to meet the demands of increasing knowledge; heat and light have abandoned some of the various methods of proceeding from the Sun to Earth provided for them by physicists from time to time; many dog-eared leaves in the Geologic book have been torn out; combating biologists have found more hidden wheels in the machinery of

the ovum, and constructed man with his load of inheritances upon several new theoretical plans based thereon, but there does not walk upon the earth one solitary scientist who is justified by the joint investigations of them all in asserting, as has been done, that the opening days of the Twentieth Century confront us with *demonstrative* proof that the idea of immortality is a dream.

One of the wisest and most persevering investigators, George Romanes, the man who first sought systematically for and found in the medusa what is probably the primitive nervous system of living creatures, says in "Mind, Motion, and Monism": "Because within the limits of human experience mind is only known as associated with brain, it clearly does not follow that mind cannot exist in any other mode." "There is no being without knowing. . . . If there is no motion without mind, no being without knowledge, may we not rather infer, with Bruno, that it is in the medium of mind and in the medium of knowledge we live and move and have our being? . . . Yet even here, if it be true that the voice of science must thus of necessity speak the language of agnosticism, at least let us see to it that the language is pure, let us not tolerate any barbarisms introduced from the side of aggressive dogma, so shall we find that this new grammar of thought does not admit of any construction radically opposed to more venerable ways of thinking—that if a little knowledge of physiology and a little knowledge of psychology dispose men to atheism, a deeper knowledge of both, and still more, a deeper thought upon *their relations to one*

another will lead men back to some form of religion which, if it be more vague, may also be more worthy than that of earlier days."

The claim of thoughtful and hopeful humanity has been that individuals may be immortal. He would not be a rash man who should add to his hope the expectation that sometime the certainty of immortality should be scientifically manifest, but he certainly goes to the verge of rashness who asserts that it is now or ever will be demonstrated by human science that individual life is *not* immortal. We measure mortality by and in a dying environment, we witness the protean changes of form and expression, and the columns of mortal figures which we add but result in mortal totals. The very conception of immortality, indeed any conception of it, must be, and is, always of another and different environment.

All that science has measured, weighed, gauged, or analyzed, to this day has been that which appeals to our five senses, and even that has not as yet found its limits. We do not know what energy is, and the least in size and latest in discovery of physical organisms reveals it operating with such marvelous precision and selectivity that the last words of science uttered with bated breath are: "Energy may be conscious!" Possibly we may yet shout in the positiveness of conviction, "Energy *is* conscious, energy is consciousness, energy is mind!"

Whether we may not reasonably postulate units of energy as a substitute for the hypothetical hard atoms and find in ether and motion the key to the

kaleidoscopic phenomena of nature, is a question which I hardly think can be at present answered in the negative.

Much of the intellectual fogginess surrounding the idea of immortality may arise out of the fact that we are prone to limit our conception of it to the immortality of man *qua* man, whereas the true question should be: Is the individual immortal? A man is but a form of energy as presenting its necessary phenomena in the existing environment. He is an essential adaptation to changing surroundings.

The transformation of energy is supplemented by the reversibility of energy. When I speak into the transmitter of the telephone, the energy forms of my voice succeed one another in the various vibrations of the tympanum and unseen and unheard traverse the long wire, the environing medium is different, the energy forms are different likewise, but upon reaching the enveloping atmosphere beyond the receiver they are again what they were before in the same medium, contain the qualities of my voice, and all along the line are in changing forms, but retaining individuality of energy.

We are *what* we are because of *where* we are.

The permissive suggestion of Socrates to his mourning friends that they might bury him "if they could catch him," savors of a profound insight into the real nature of life.

With our microscopes and in our chemical laboratories we are analyzing *what* we are with *what* we are and in the *where* we are.

We are what we are in form and expression because of our relationship to the environment in which we form and express; we could not be other than we are in that environment. If evolution has not taught us that lesson, then we are remarkably blind to its leadings.

Our forms, senses, arms, legs, chemical processes, methods of analysis, and expression of ideas, all are but so many inevitable results of the movement of the individual in this environment. What would it be if operating in another and different one? Who can say? Certainly the scientist, whose very science is measured in terms of the environment, cannot be permitted to assert that he has demonstrated that it could not exist at all. As the expression of a unit of force in *this* environment, *man,* undoubtedly he may demonstrate the impossibility of its similar appearance in a foreign environment, but that is as far as reason permits him to go in condemning the hope and expectancy of humanity that its life has no death, but does have inherent power of adaptation to any environment in which it may find itself. Until Biology is able to give some more lucid explanation for the phenomena of thought and memory than the hazy one of chemical action, or phosphorescent gleams, it is not in a position to declare an ultimate conclusion that the individual is merely a machine and its mortality demonstrated.

If mind is but the functioning of matter, if thought but the secretion of the brain, then memory is utterly inexplicable, and consciousness is but

the immediate moment and unable to declare itself, for in functioning, a state or condition becomes another state or condition and the process is already past. Indeed, upon such a foundation I do not see how we may rationally speak of a "state." Nothing would be static, it would be an ever-becoming. The process is not like that of the kinetoscope, where the pictures succeed each other as independent forms, separate, distinct, but producing the appearance of movement only by the rapidity of successive presentation; not so at all. The progressive change in man is one movement of a constantly evolving figure of one changing form. As a matter of common experience we know that, whatever the unit of force may be which is thus adapting itself to its environment, we are not only *aware* of the moment's process, but memory means that we compare each wave of the flux with the wave which preceded it and, indeed, even anticipate the wave which will follow; otherwise we could only be conscious of being, not of having been, nor of becoming.

These may be old problems, but they ever remain unsolved to rebuke the effrontery of men who think they have surveyed the universe of mind by measuring along the straight line of specialty.

If we be logical in our analysis of the proposition that biological science demonstrates that mind is but the functioning of organized matter and therefore there is nothing to survive, we shall add to the conclusion, "therefore there was nothing to commence."

To limit the evidence for or against the immortality of the individual to either physical or psychical phenomena, or to biology or psychology, is to reach a conclusion based upon one side of the case alone.

I believe that every thoughtful man will recognize the fact that it is to the failure to harmonize the data of these parallel sciences that we must look for the reason for the unjustified conclusions reached by our great physicists and biologists.

A work upon biology is a text-book or a treatise upon a special subject; so is one upon psychology, but in the attempt to reach a conclusion concerning the meaning of life or its continuity, one surely betrays an unconscious prejudice if he refuses to consider the bearing of the data of both these sciences upon the matter.

Professor Haeckel frankly says that it is impossible for any man to be master of all the sciences, and that his own command of them is "uneven and defective," though, of course, this is comparatively so only. So that when we read his latest book we are not studying the well-digested data presented in a text-book or a scientific treatise, but rather the opinions of a scientist who, adding to the legitimate products of a personal research on his own part the declarations and opinions of others, which he has exercised his own judgment in selecting, has constructed a scheme of existence which satisfies himself. This should be borne in mind in reading his book, because otherwise we may fall into the grievous error of supposing ourselves compelled to accept his conclusions be-

cause of his great prominence in his chosen field of research.

The latter part of his work consists of chapters which deal with questions entirely outside of his special sciences, as, for instance, those on "God and the World," "Knowledge and Belief," "Science and Christianity," "Our Monistic Religion," "Our Monistic Ethics," and the "Immortality of the Soul."

That Professor Haeckel, as any other scholarly, influential man, has a right to form and express his views upon these subjects, no one for a moment can doubt; but that his religious, philosophical, and ethical opinions should be received and given the same value as his theses on zoölogy or evolution is open to grave doubts for the reasons which I have suggested.

It is not my purpose to undertake the foolish task of criticising Professor Haeckel in the line of thought and research where he stands preëminent, nor to review the caustic strictures placed by him upon religion and the ordinarily accepted articles of faith. I do, however, hope to be able to give some reasons for not following him into the marshes of absolute negation of individual immortality. I cannot hope, nor shall I attempt, to present any explanation of the Universe, nor arrogate to myself the ability to understand it, but merely to suggest that *some* avenues of escape from despair are yet scientifically open to the imagination which will even bear the test of the application of "pure reason." The great question presented by Professor Haeckel's book is whether

the individual can survive the wreck of its physical body, and, of course, that involves the other questions, What is an individual, and did it have a beginning?

It is true that the immortality discussed by Haeckel is the immortality of the soul, but as he defines the soul to be a collective title for the sum of cerebral functions, these to be determined by physical and chemical processes, it is apparent that he treats the whole man, physical and psychical, as the individual; therefore, soul and individual are for the purposes of his chapter on immortality one and the same thing. The gist of his argument is that soul being but the sum total of these cerebral functions, when they cease there is nothing in the nature of an individual to survive. Much of the discussion is directed to the annihilation of the doctrine of immortality as presented by Christianity and other dualistic religions. It has seemed to me that a larger view of what an individual is, than that which narrows him to the mere manifestation in the material body, is scientifically possible; and I have endeavored in the pages which follow to outline the reasons why I think so. Not that I claim that the particular theories which I advance are exclusive, but that they are subject to fewer serious scientific objections than the negative conclusions presented by Professor Haeckel. They are possibly true, even in the light of recent science, and if possibly so, then the argument for the negative is invalid; and if the possibility trends toward probability, then the negation disappears entirely.

Unless some such idea of what an individual is as is presented in these pages is a true one, I really do not see that science recognizes any individual at all. Professor Haeckel's definition of an individual is that of a unity which cannot be divided without destroying its nature, an indivisible entity; and as we know that the germ cell of animal life does divide many times in segmentation before birth and continues to do so after birth in generation, it really would appear difficult to locate individuality, although he says that there (in the cell) the individual begins his existence. Its production of the other generative cells sexually can no more be "overgrowth" and compatible with the preservation of the individual than is the segmentation of protists, which Haeckel says destroys the individual.

I cannot resist the feeling that there is reason to believe that there is meaning in the individual life, a meaning which holds such a relation to the Universe that its value must not be measured in time and space, but in the time of times and space of spaces—Eternity. The existence of ether we probably admit from necessity growing out of evident phenomena demanding it, but when Professor Haeckel claims it to be "thinking substance" which would appear to possess the *essence* of thought, but does not *think,* that is his opinion, demanded by his own preconceived notions and which he supplies in his scheme to meet the demand.

When he postulates an eternal, infinite ether, which has a tendency to condense and otherwise

differentiate, that is his opinion again, and we are left to ask, What is a "tendency?" Is it not a will, and if it tends to differentiation, is it not a differentiated will, and are we not again at a point where we may just as scientifically as we postulated all this, also postulate individual forces—units of force?

Before I surrender that which I have always considered my great and overshadowing motive in life, namely, my individual, eternal value in the Universe, I must have something more than the opinions of any man, however great. When Professor Haeckel asserts that when the cerebral functions cease, thought and consciousness do likewise, that again is an opinion, it is a mere assertion concerning the very question at issue. He does not know that they cease, and from the very premises upon which he constructs his conclusions, it is evident that he cannot know. How can he expect to measure the thought and consciousness expressed in something which is not cerebrum by cerebral activity in his own brain?

I will conclude this introduction by asking the reader to consider, as he reads the succeeding pages of this book, that the statement of Professor Haeckel that this "ether," this "spirit" (force), this "thinking substance," these "fundamental postulates" are to be viewed as *eternally* producing the differentiated aspect of the Universe, so that we are not to "hark back" to a point where the two were equated in a homogeneous infinite sea. That being so, of course it follows that the present characteristic differentiation of the Uni-

verse has been eternally in existence—now here, now there, now this, now that—and that, therefore, a grand organization sufficient to eternally have been the manifestation of one great organized mind has never been wanting, and much that I suggest in the following pages is, therefore, rationally conceivable; and being so, constitutes so much of possibility to offset the dogmatic conclusions of Professor Haeckel.

Chapter II

SOME THINGS WHICH SCIENCE DOES NOT KNOW

A fair examination of the "demonstration" by Haeckel and others of the mortality of man, when examined critically by the application to it of the rules of evidence as adopted and prevailing in our courts of law, will result in the conclusion that it does not meet the requirements of the rule of circumstantial evidence.

If the evidence is of separate facts, they must be so connected together in an unbroken chain of continuity as that only one conclusion can flow therefrom. There must be no missing links in the chain, no unknown quantities which must be supplied by hypotheses, unless they are themselves the conclusions sought for, and are irresistible deductions. A chain of evidence, like one of iron, is no stronger than its weakest link.

I fancy it will be admitted that when Science undertakes the task of destroying the belief of ages of nearly all men, one which arises without external stimulation, which springs up within the mind as a very part of its constitution, namely, the belief that the individual is immortal, the burden of proof is on Science to establish the fact of mortality.

This, I think, will be manifest when we remember that the idea of immortality finds its place in the mind itself and appears to be as innate as anything else; hence, to destroy it, to demonstrate that it is false, requires a prior demonstration as to what mind is in itself. Science asserts that we know nothing except through the senses; therefore, as the idea of immortality is of a life where knowledge exists without the use of the senses as we know them, and of an activity in a medium now immeasurable by these senses, Science can know nothing of immortality and can demonstrate nothing concerning it pro or con.

Science asserts (Haeckel) that the atoms probably are endowed with will and feeling. I do not dispute the fact, but Science has never seen, felt, heard, smelled, or tasted an atom, or received any knowledge of it through the senses except by inference; therefore, it *knows* nothing about the existence of atoms, and hence cannot endow them with qualities of will and feeling, on his hypothesis.

Scientists are disagreed as to whether the hypothetical atoms are hard or soft, are matter or force, are spirals or vortex rings, are eternal or appear and disappear; hence, the hypothesis of the existence of atoms includes a guess (a rational one) at what they are if they exist. Therefore, Science cannot tell us anything about atoms that is not open to readjustment as to its truth.

Science relegates consciousness to the activities of the cerebral cells, but it cannot construct a synthesis of those activities which will result in a

synthetic consciousness competent to explain what we feel as to the unity of our consciousness.

Science begins its analysis of man in *media res,* at the intricately organized, fertilized ovum cell, smaller than the point of a needle; therefore, it does not know the origin of his physical or mental capacities.

It finds apparent, inherited traits, and is forced to crowd them into this cell.

It is confronted with genius, and is compelled to crowd the "race memory" into this cell.

It is aware that a man's wonderfully compounded body comes from it, and perforce of necessity packs this cell with additional memories of the human form, organs, central system, etc.

All of this is usually admitted to be a rational theory, but Science does not *know* and cannot tell what memory *is,* that it can be thus potential in a microscopic speck; hence, the fertilized ovum cell is a convenient closet in which to store any biological problem.

Science asserts memory and consciousness to be products, but starts with such a cell (fertilized ovum) already loaded with memories, which do not appear except as *after products* of the activities of changing syntheses growing out of the multiplication of the cell by division; therefore, there is as much reason for believing the memory to be something *aliunde* the physical cell and which is the activity behind the syntheses as to believe the cell to be itself a bundle of potential memories.

Science claims (Haeckel) that the noblest love of human hearts is precisely the same thing, on a

larger scale, as the chemical affinities of atoms; but Science cannot find in the whole universe an atom which by reason of its affinity for another will by the deliberate exercise of the will with which it is endowed lay down its life and go out of existence for another. Such an analysis of love as that given by Haeckel is *reductio ad absurdum.*

Science (Haeckel) denies anything to soul, mind, or spirit except as the result of chemical activities of the cerebrum.

Everywhere atoms of specific character, associated in similar ways and subjected to the same stimuli chemically, act uniformly in an identical manner. Science can differentiate brain cells by localities, but it has not as yet been able to show that the substance is not identical in all of them. These cells are in the different localities subjected to different stimuli, but Science cannot give a *known* reason why the associative cells of the cerebrum are enabled anywhere to land a unity of consciousness. Science does not know what either memory or consciousness is in itself.

Science *knows* nothing about the qualities, forces, or organic potentialities of the ether one single step beyond the point where it has witnessed its supposed phenomena. If it did, it would not be on the outlook for more discoveries every year; hence, the increasing discoveries of the qualities of ether may lead toward, instead of away from, even an organized immortality.

Ignoring the theory that individuality may be at last a form of energy and its various bodies but

presentations of it, Haeckel makes light of a possible gaseous body to the soul and says that if it were possessed of such a body, "we could then catch the soul as it 'breathed out' at the moment of death, condense it, and exhibit it in a bottle as 'immortal fluid.' . . . By a further lowering of temperature and increase of pressure it might be possible to solidify it to produce 'soul snow.'" He then naïvely suggests that "the experiment has not yet succeeded." Just so, it has not, and therefore we may not assume that it can be done. Here Science betrays the weakness of its one-sided method of reasoning, in that it is guilty of the folly of seeking for the immortal in the vehicle instead of in what it carries. Souls may have a gaseous body for aught we know, and yet such embodiment may be temporary.

It is just possible that even if such aëriform beings credited with "being," possessed of the "*physiological functions* of an organism" (Haeckel), existed, such a process might call forth a comment from the individual soul of which it was an "organism," similar to that of Socrates, "You may bottle me, if you can catch me."

But Haeckel goes further and says that an "etheric soul . . . cannot possibly account for the individual life of the soul." Perhaps not, but might it not be that Science does not know whether the "individual life of the soul" can or cannot account for an etheric body of the soul? I perceive the radiant energy of ether as white light, but if I pass its pencils through the prism, I cause the phenomenon of white light to break up

into its varying wave lengths and its combination becomes apparent to me as rays of different colors, and each will perform its different functions and produce its different phenomena; so with the Roentgen and N rays, and otherwise in physics a few rather startling results reveal themselves as the days go on. Science *knows* only that which it knows about the ether.

A theorist who will postulate an ether "not atomistic, not made up of separate particles (atoms), but continuous," but which can in some manner be condensed into a structure (matter) which *is* "atomistic," made up of infinitesimal, distinct particles (atoms), discontinuous, should not treat with dogmatic contempt any theory which supposes an ether in which organisms may exist. Ether is yet a mystery, and its unknown capabilities and potentialities will not support an absolute denial of any rational theory.

Some Scientists believe experimentally in telepathy, or communication of mind impulses at a distance, but they know nothing about its *modus operandi;* others deny its existence without examination or experiment; hence, Science is at war here with itself.

Science denies any value to the transcendental.

It is transcendental that the germ cell can contain all that we believe it does. Such "unconscious memories" are transcendental.

It is transcendentalism to postulate eternal, infinite, thinking substance; the infinite itself is transcendental.

It is transcendentalism to bestow will and feel-

ing upon unknown atoms; will itself is transcendental; we only know it by what it does.

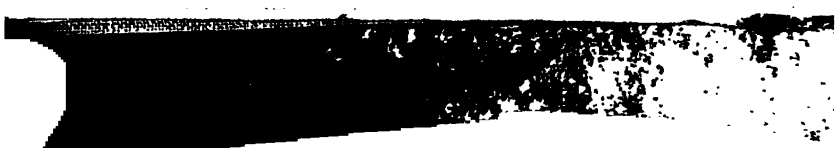
It is transcendentalism to postulate movement as an "innate property" of substance; innate properties are transcendental, so is substance itself.

It is transcendentalism to think of a commencement, and we do not escape it by thinking "eternity," for the thought of eternity is transcendental.

Anything is transcendental which is absolutely beyond our sense capacity, even though we find reasons for postulating it. If there lives a Scientist or lay thinker who can honestly say that his *senses* give him proof demonstrative of these things which I have mentioned, he has not as yet had the temerity to say so in print. We *believe* these things to be so, because we have no better explanation of the phenomena witnessed by us daily.

Science makes use of words as names of recognized conditions and experiences, such as consciousness, thought, memory, dreams, hallucinations, imaginations, etc., all of which are absolutely essential for the purpose of distinguishing one condition of mind from another; but by giving names to conditions we do not at all analyze or explain the conditions themselves.

The word "imagination" is a common word enough, and so is the condition for which the word stands. And we understand by it that it refers to that experience of the human mind in which it calls up to consciousness images or pictures in the mind. When we have followed the process



just as far as our knowledge of the action of the cerebral cells permits us, we remain with these questions unanswered, viz.: What do we mean by "images"? What is the medium in which they appear? Is it a substance? If so, what is a substance? Why do they possess the power of motion, change, and activity in themselves? Consider, for instance, the dream state. Dreams are of such common experience that the atmosphere of mystery surrounding them is lost sight of in the commonplace occurrence of the dreams themselves.

Here is a dream as an example in which I have found an abundance of mystery, which even the voluminous treatises on psychology do not enable me to penetrate. I dreamed that upon the election of certain officers to fill a number of public positions a banquet was given, to which all the fortunate individuals were invited, including myself and a friend, Judge B——. Upon assembling at the table we found that there had been placed before each guest a soup tureen full of soup. Considering this to be a novel and rather ridiculous innovation, I was guilty of making a most atrocious pun. Turning to my friend, Judge B——, I suggested that such a supply of soup was "superabundant." Now this, so far, was not much beyond ordinary experiences in a dream—many have made puns undoubtedly when enjoying good company in dreamland—but Judge B—— laid his finger waggishly against his nose and responded, "No, Judge, this is superficial," which considering that the banquet was an official affair, was not

bad for Judge B——. Right here, however, comes that which I find difficulty in explaining to my satisfaction. In the first place, I was conscious, self-conscious, conscious of my dream surroundings, conscious of the fragrant soup, and, so far as I am concerned, I can perceive no distinction between the character of the *consciousness* then and now in wakefulness.

Next, I had the ordinary use of my faculty of imagination. I evolved a pun, but *I did not anticipate* the pun which was hurled back at me by Judge B——. Indeed, I was rather piqued in realizing that his was a better pun than mine. The point of his witty saying revealed itself only *after* the utterance of the language by him, and I enjoyed it and laughed heartily.

I realize that all this seems simple, it was "only a dream," it can be analyzed by applying to it the psychological methods, but I insist that the background of the whole experience lies in *terra incognita* to Science.

If the "soul," the ego, is the "sum total" of the activities of the cerebral cells, then, considering that I was conscious of my individuality and engaged in a punning duel with another "sum total," which was only present in my mind, the "soul," the ego, the *individual,* unloaded some of the units which ordinarily go to make up the individual, leaving the individual intact and supplying a sufficient number to create another "sum total" as an individual.

If it be an easy matter to explain how we perceive moving, living, thinking forms in such a con-

dition of dreaming, suppose we ask ourselves again, in what substance do these images appear? If they are not real, what is the unreal? If I create them, out of what, in what, do I do that?

Science relegates all these phenomena to the activities of the cerebral cells, but it cannot and does not pretend to go further than to push the mystery back.

Science declares subject and object to be one, but somehow the subjectivity of the individual appears to succeed in keeping itself behind even the objectivities of the imagination and recognizing an objectivity correlated to a subjectivity which it will not consent to acknowledge as itself.

If chemical analysis of the substance of which cerebral cells are composed revealed the fact that they are, in different localities of the cerebrum, differently composed of varying elements, so that a center of cells in one part should be of a different chemical construction from another, we might find some reason to declare individual consciousness, mind, etc., to be the sum total of their activities, because we should have a basis for such a differentiation as might account for the tremendous variations in the substance of our thoughts and consciousness; but the cells have not been shown to be so differently composed of different elements.

Great as has been the advancement of cytology, we really know little about the substance protoplasm. As is said by J. A. Thompson in "The Science of Life": "We have no knowledge of the real nature of living matter; we cannot define any sub-

stance physically or chemically and say *this is* pure protoplasm. According to one view, protoplasm is a mixture of complex substances; according to another view, it is a single substance allied to proteids; according to a third—perhaps the most probable—view, there is no such thing as living matter. The meaning of the last view, which may appear paradoxical, is simply that vital functions may depend upon the interactions or interrelations of a number of complex substances, none of which by itself could be called alive."

It is for that reason that Science cannot authoritatively declare this wonderful individuality to be the product of the chemical activities. It is emphatically an open and undecided question. No doubt the form of motion of these elements differs in the various cells.

Again, although it be admitted that the stimuli reaching these various cell centers are different, and hence the different forms of activity, we do not escape the dilemma. As I suggested before, it leaves no room for the apex of an ultimate synthesis, the individual, for we must at least reach a cell substance where there certainly could be no "sum total" of movements which could recognize detail.

Science does not know but that the following is the real truth, neither do I, neither is it to be demonstrated that it is not.

Suppose it to be true that there is a substance in which individual centers of consciousness function as forms of motion of it (surely, while we are

accepting ideas as forms of chemical activity, this is not a violent assumption). Suppose this substance to be capable of a great variety of forms (and here again, in view of the recent discoveries in the realm of ether, this is not a foolish supposition); and suppose again that in order that such an individual center of consciousness, never itself departing from its eternal habitat, might be conscious of objects in a more dense medium, ponderable matter, it should be essential that the sensations produced by such objects should be refined, should be accented, should be sifted through substance, which approaches by gradations up to the imponderable substance in which it functions. It would follow that only by such means could such an individual be conscious of such objects and it would likewise follow that any disturbance at any point in the process of accentuation would result in a distortion of the object in consciousness and any destruction of the means of such a process would cut off all consciousness of the objects as such as surely as the removal of the prism from the field of light puts an end to the spectrum.

Such a destruction of the means would not necessarily result in the death of the individual, but would merely remove the opportunity for further consciousness of such objects as such.

The natural inquiry to succeed these suppositions is whether we possibly have any such nexus, any such mediator between ponderable matter and such an individual center as I have postulated.

I think we have, in the body, in the organs of it,

in the central system and culminating in the cerebrum.

Certainly a science which can find sufficient instability and delicate irritability in the cerebral cells to establish a field for a "sum-total" soul should admit that their substance is about as close an approach to one end of such a bridge as can well be imagined, and really the external termini of organs of sensation reach the other extremity.

Such a theory is at least consistent with all the theses of evolution. It accounts for consciousness and unconsciousness of objects; it provides an arena for the display of dreams; parallels in its process what we know of the march of evolution to and from established stations of automatism; it suggests a meaning to pain; it has a meaning in itself; leaves the individual possessed of a soul; and is even monistic, if properly comprehended.

Now, Science does not know this not to be the truth, and, therefore, it may be approximately true, notwithstanding the pseudo-demonstrations of scientific men that man is necessarily mortal. All I claim for it as a theory is its possibility.

What Science knows is of great value, because its knowledge makes the ladder upon which we climb for wider views, but what it does not know is valuable, because it is worthy of our search for it; our instinct protests against an abandonment of it as a probable, or even possible, truth, merely because it is not demonstrated and known.

Assuming such a theory as I have suggested to be a rational one, it would then follow that the "sum total" of the chemical activities of the cere-

bral cells would be not the soul but the activity of the soul at that point in its line of continuity from objects in ponderable matter to their perception by its activity in imponderable matter. Automatic centers would then be in the nature of relay stations. In this connection it may be said that the unit cells of which the human body is composed are themselves open to an application of the scheme outlined, for what are they but masses of protoplasm in which is situated a less-equilibrated substance (the nucleus), which, for aught Science knows, performs a function akin to the cerebrum of the whole man.

Science does not know, and cannot therefore affirm, that mind and matter are not opposite poles of the same thing, nor that mind may not be as complex at its pole as is ponderable matter at the opposite pole. The processes of evolution lend as much color to that proposition as to any other, for it may well be that for the appearance of complex mind in ponderable matter as a mere phase, it must proceed from the simplest and nearest form of ponderable substance by the evolution of syntheses, which in turn become automatic, to the presentation in matter commensurate to itself and its will, and that this process of evolution may be as various in its applications as the known and unknown properties of substance, ponderable and imponderable, may demand. The smallest form of ponderable matter is complex enough to allow us to be true to even Monism.

Science does not yet know the real distinction, if any exists, between living and so-called non-

living matter. True, Haeckel declares the difference to be in the presence or absence of the power of reproduction; but, as Professor Shaler in "The Individual" says: "In some unknown way the molecule and the crystal alike tend to increase their kind."

Verworn, in "General Physiology," asserts the distinction to consist in the capability of living matter for the "metabolism of proteids"; but while it perhaps may not be properly called the "metabolism of proteids," yet a similar action is noted in crystals, and even may exist in molecular aggregates. (Shaler, "The Individual.")

For all these reasons and many more which will suggest themselves, a thoughtful man is still entitled, without losing his common sense, without sullying the whiteness of "pure reason," to declare that Science may have failed to discover the great life, the eternal being, of the universe to be that very unity of units, one and the many, whose eternal processes of life it undertakes to measure by a specialized evolution which begins and ends.

Chapter III

THE LIVING ENVIRONMENT

I have for some years pushed the search of the microscopic into the substance of living things, expecting possibly somewhere and sometime to obtain some light upon the organic ultimate unit, and thereby justify such conclusions as have been reached and promulgated by a class of materialistic scientists who, instead of standing in awe at the sight of the ever-retreating mystery of life, declare that they have demonstrated the hope of man's immortality to be a delusion. I am frank to say that, owing either to stupidity or lack of some knowledge attained by them and unpublished to the world for which they labor, I have found neither the ultimate unit of life nor the evidence of the delusion.

It is an easy matter to dismiss the whole mystery of physical and psychical existence by the assertion that the microscope or chemical analysis has revealed the fact that all life is resolved in its finality to the cell—that there it begins, there it operates in community, and there it ends. If it were true that the so-called cell is the unit of life, this might well discourage the further search for light upon the subject, for we should be compelled to admit that if life commences with

the cell it will end with the cell. But it is not true; the unit cell is but the adopted unit of physiology. It is the unit of its analysis in theory, and the unknown sea of activities is thus far quite beyond its reach.

Much depends upon what we mean by "cell" and what we understand by "life." If by "cell" we mean any primary physical appearance which evidences life, then the cell might be the unit of living matter, but in that case I should ask if we have discovered the cell, and the answer would have to be, no; because, aside from the "cell" as understood physiologically, there are evidences of life in portions when separated from it. If by "life" we mean capacity for adaptive movements responsive to stimulus, then, again, what is ordinarily understood as the cell is not the unit of living substance. That which in itself is complex is not a unit, except as it is considered relatively to a unity in which it is embraced. There are various intricate movements in the cell, particularly the segmenting cell, which are responsive to stimuli from within the cell. Life appears only where there are two or more of something, unity and units.

The accepted cell is for physiological purposes the unit, but this is only so when considering the life processes of the whole body. Behind all this is the "thing itself," that which manifests in the cell, but which is not necessarily limited to it, that which demands the process; there is effort, is will, is self.

Not that physiology or biology demonstrates

their existence, but that they do not demonstrate their absence. The data of these sciences are not only consistent with but compel the presence of something akin to them, and the fact that this is so arms the cohorts on the spiritual side of the question and disarms the materialists, unless it be finally conceded that mind and matter are but opposite poles of the same substance, in which case we have the true basis for a monistic conception of the universe.

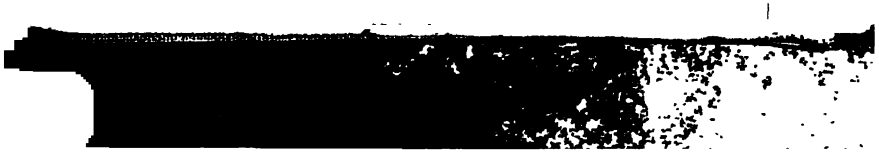
Man, and for that matter any animal, is apparently a simple machine enough in his last analysis as physical animal. He is but a congregation of cells operating in essential harmony, or many cells operating as one cell; but all this falls far short of solving the mystery or putting an end to serious inquiry into the origin and destination of man.

The cell itself is not simple; it is as far from being so as is that vast congregation of its kind in man; it is tantalizingly complicated, exceedingly intricate in its activities, wonderfully surprising in its potentialities, either as a whole or when separated into pieces, and it is infinitely small in its ever-receding units. Nothing has yet been found in the cell so little that there have not been undeniable evidences of something yet more minute behind or within it. Without the nucleus the protoplasm exists for a while; without the protoplasm the nucleus survives; with a bit of protoplasm and a bit of nucleus you may have continued life capable of repair and growth. The nucleus is but a minute speck in the substance of

the cell, and when it is examined under powerful lenses is itself exceedingly complex and puzzling; it has within its substance, small as it is, other bodies, known as chromosomes, and these in turn may be perceived to be constituted of yet smaller bodies, and by parity of reasoning they probably would, if we were able to see them, lead us down a long line of changing forms within forms long before we reached that elusive thing, the unit of life.

We might as well expect a man to perform the notoriously impossible feat of lifting himself by his own boot straps as to expect the remarkable activities of the cell to present themselves to our observations in that body if it were the unit of organized life. Nor am I here ignoring the probable chemical factors which should be considered. We know as little about occult chemistry as we do about the mechanism of the cell, but we do know that the tendency of chemical and physical energies is to an inevitable equilibrium, and that in protoplasm quite the contrary is the fact. Its growth and its activities all depend upon its lack of equilibrium.

As the modern study of the germ cell proceeds, it results in a curious but not surprising grouping of the biologists about different centers of opinion. Of course the great puzzle which all are seeking to solve is the cause of the development of the fertilized ovum into the particular individual who appears to come from it, and this mystery includes the inner ones of heredity and its bearers.



It need not be said, for everybody knows it, that the mystery has not been solved. No sooner do the groping fingers of the scientist lay hold upon a new discovery in the elements or activities of the cell, and cause him to imagine that the goal is at hand, than some other investigator in England, Germany, or France, or here at home, locates with his microscope, or reveals by chemical experiments, some new factor which entirely upsets the beautiful and apparently satisfactory theory which has nearly been adopted. When it was ascertained that the nucleus of the spermatozoön and that of the ovum fused and became one nucleus in which appeared certain bodies which always were of a definite number in a given species, and which were called chromosomes, it was a natural conception that these bodies were the bearers of heredity. They may be, probably are, but many biologists do not think so. However, upon this discovery Weismann reduced the operations of the cell to a system with an elaborate division of the substance into "ids," "idants," "biophors," etc., in which certain potentialities appeared. Spencer indulged in the idea that there were "physiological units" in the sperm and germ cells; Ryder advanced the dynamical hypothesis; others, unable to reach any satisfactory explanation, rehabilitated the discarded idea of a vital force under the somewhat apologetic title of "neovitalism." We find by some experiments that the substance of the cell is not differentiated so that one part will not have all the potentiality of definite development which every other part has; and

by others that it *is* so differentiated. We are confronted with these "physiological units" on the one hand, as determining the outcome of the process of development, and on the other by the statement that the substance of the sperm cell and the ovum cell coalesces.

As the substance of each cell is like the other, it would almost seem that by such a fusion all special inheritance from the parents would be lost, particularly as we are asked to consider the cell so produced by fusion to be a machine and all its operations mechanical.

Indeed, it is difficult to perceive how there can be any heredity except such as is the result of the characteristic structure of the plasm belonging to the particular form of animal life from which the egg came. If we supply the chromosomes with a persistent differentiation, then we have some possible bearer of heredity, or if we admit the "ids" and "idants," etc., of Weismann; but if these are themselves but products of the mechanical operations of the cells, the mystery of heredity is as dense as ever.

Now I do not know what the truth is as to heredity, whether it is a myth or not; whether it is the result of association and suggestion or not; whether the chromosomes are its bearers or not; or whether at the fusion of the plasm of the nuclei any definite, special bodies remain with undisturbed potentialities or not; these are problems for the biologists, and so long as they range themselves persistently upon opposite sides of the question involved, plain men must be con-

tent to select such views as appeal to their reason.

Certainly if a biologist commences a search for the factors which control heredity and takes it for granted that Ryder is correct when he says that 'Tendencies' and 'Proclivities' are words that have no legitimate place in the discussion of the data of biology any more than they have in natural philosophy or physics," he must of necessity end in mere mechanics without a mind or soul. If he predetermines with Haeckel that there is no individual soul, he will find abundant reason in the data of biology for reducing everything to condensing points of ether.

Biological data are very accommodating; they will give an ample supply of arguments on any side of the question; they only require that you name your desired conclusion in advance.

The reason for this is that the ultimate springs of life are hidden in the rock of Being itself.

Aside from its importance as an isolated science for its own sake, Biology has a value not to be properly measured by the special investigators in that field, but as I have suggested before, by the constructors in the work of generalization. If it has any value to the average thinking man beyond the mere gratification of curiosity, it is because of what it adds to his general knowledge of life. No man in making a survey of any object contents himself with a measurement in one direction only; he must ascertain not only length but breadth, not only length and breadth but thickness. In arriving at some rational conclusion con-

cerning the probable duration of individuality, we must consider not only the physical aspect but the psychical, if we do not assume the extraordinary attitude of considering the individual as a being whose external dimensions are a full measure of his contents. Either we have an irrepressible conflict between the two sciences of psychology and biology, or they compensate each other. Considered biologically and accepting the cell as the unit of life, man and all animals have their beginning in time, and, consequently, their ending in time. But supposing, as is the fact, that Science utterly fails to reach far enough back to locate the dynamic force behind physical life pushing it into manifestation, what then? Why, we are justified in refusing to accept its one-sided assertion that immortality is a delusion, and that Science demonstrates that fact.

We appeal for an equation from the investigators of the outward manifestation to the students of the manifesting and manifested, to the psychologists. It is true that they cannot reveal to us the unit, and we find ourselves merely reducing the size of objectivities and segregating the organic centers of perceiving subjectivity.

Wherever we find psychological phenomena, there we find running parallel with it physiological phenomena, not occupying the relationship of cause and effect, but as presenting evidently two phases of the same activity. No intellect gigantic enough to solve the problem of the distinction between mind and matter, if such distinction exists, has as yet made its appearance. The profound

researches of our great specialists in the field of cytology have and should have commanded our respect and admiration, but the weight of a great name in such labors should not crush our rational hopes. To be able to demonstrate how the cells work, to portray the machinery set up by them, is not to make apparent why they work or why they need the machinery. That the heart is the force pump of the arterial system, that the liver secretes bile, that the stomach and intestines digest food, that the human body is in those respects a machine, have been facts so familiarly known for centuries as to no longer cause comment. Certainly this knowledge has not been sufficient in the past to seriously disturb the thoughtful man in his confidence in immortality. All, in addition to these, that has been demonstrated in recent years in the marvelous progress made by biologists is that this larger physical machine incloses, or rather is resolvable into, smaller and smaller machines until we arrive at the germ cell. True, the battle now wages there, to ascertain if possible how, from this inconceivably intricate "machine," microscopically small, the wonderful, thinking, acting, loving "machine" called man is evolved. This battle, for battle it is, is being waged not over the germ cell of man directly, but the egg cell of the worm, the sea urchin, and others whose eggs, by reason of their availability and transparency, afford opportunities for research without undue disturbance of the contents. In the light of the deductions drawn by a few of the great investigators in the field of cytology, an or-

dinary man approaches the microscopic examination of such cells with fear and trembling, his brave hopes of immortality are about to be destroyed, and he is to find that, after all, the "fortuitous concourse of atoms" is before him, and he will stand at the edge of an abyss beyond which is no life.

If he be thoughtful, however, his approach is the end of that fear, for he will find beneath his eye such a wonderful complication full of startling potentialities as will push that cumbersome, gross, and tangibly apparent machine called man far into the background as an evidence of precedent will and consciousness.

Lest it be thought that a layman should not take upon himself the liberty to draw his own inferences from what he sees and from what others have reported, it will not be out of place to suggest that here, as in many other matters scientific, the masters of specialty disagree most emphatically among themselves as to even how this "machine" does its work. Many questions remain unanswered and many problems unsolved; and if the study of the physical egg alone be relied upon for explanation, will remain unanswered and unsolved. The germ is a mighty small affair, yet it contains within its invisible self problems which will be the sphinxes of science for all time to come.

That many of the questions which now puzzle the scientists will sometime be answered, there can be little doubt, but that there will ever remain an unlifted veil is equally certain. If there be

heredity, what elements of the cell are the bearers of it? Does the centrosome exist at all? If so, is it an element of the egg, or is it an appearance only, an effect, produced by the constriction of the plasmic substance? Does it enter with the sperm cell or is it there already? Does it pull or push? What is the unit of material life? Is there any? Is the substance of the egg differentiated or not? Do certain portions have specialized potentialities or not? Is the unequilibrated condition of protoplasm the cause of consciousness or the effect? What is the preforming principle involved in this microscopic particle which produces such inevitable, such unfailing results?

All these questions, with many others that I will not mention, have engaged the attention of earnest students and untiring investigators. Some have been, some will be, and many never can be, fully answered. And there are many reasons why they cannot be satisfactorily settled with demonstrations of the truthfulness of the answer. The powers of the microscope are limited; beyond a certain point we shall never be able to go with the use of the lenses, and it must be said in that connection that at the point where we must stop we shall yet find complications, intricacy, and marvelous evidences of organization. Even assuming that we should instead discover an apparently undifferentiated substance as protoplasm was once supposed to be, we should be no nearer the demonstrative solution of life, but should be compelled to resort to occult chemistry for further investigation; unless, indeed, the hitherto

unaccomplished feat of producing spontaneous generation should be performed. When consciousness shall be produced in artificially manufactured living substance, and the unequilibrated condition of such substance preserved thereby, chemistry will have gone far toward disturbing the serenity of our hopes concerning continuity of individual life, but will not even then have destroyed them utterly. Even in the artificial production of such living substance we might yet be able to assert that the successful chemist has but produced an essential environment for a living unit to find opportunity, as has probably been done by Loeb in chemically assisting the segmentation of the unfertilized ovum of the Sea Urchin. Even Loeb's famous experiments *begin* with a living organized cell. The mystery of life is elusive and it slips away from the profoundest inquiring savant as from the hungry minds of those who are prone to accept the greatness of a name as a guarantee of the incontestable certainty of deductions and conclusions presented under its authority.

We should, however, not forget that the contention made in this work is not that the immortality of the individual is a demonstrable fact in the light of recent science, but that the contrary has not been, as asserted, demonstrated. I have so far failed to find in the forward movements made in the biological and psychological fields any reason to abandon my convictions in that regard, and that there is no necessity for the uneasiness which is apt to be engendered by the discoveries of the

biologists is admitted by C. O. Whitman in his prefatory note to "Biological Lectures," 1894, in these words: "While Biology is certainly indebted to physics for some of its metaphysics, it is to the credit of physics to have made it clear that mechanism, indisputable as are its methods, affords no fundamental explanation of anything. As Karl Pearson has so well said, the mystery of life is no less nor no greater because a dance of organic corpuscles is at bottom a dance of inorganic atoms. What dances and why it dances is not explained by reducing size to the lowest limit of divisibility and just as little by the assumption of ultraphysical causes. . . . The ultimate mystery is beyond the reach of both mechanism and vitalism. . . . Some place the secret of life in the cell, others in smaller units, but no one, so far as I know, has looked upon the unit as anything more than the seat of the mystery."

If the memory of the gill clefts, those ghostly reminiscences of our aquatic ancestors, appears at a certain point in the progress of segmentation of the cell and formation of the embryo, by what conceivable process can it be said that thereafter in the embryo arising from the same egg a "memory" of the characteristics of the parents make its appearance, unless we recognize many units in the one?

The gill-cleft "memory" does not appear until a certain point in the synthesis is reached; hence, it is the memory (if it be a memory) of that particular synthetic organism as it stands at that point of time constructed out of the daughter cells of

one cell. The subsequent presentation of parental characteristics is the memory of another synthesis and the ultimate personality of still another. We are dealing with the functions of cells, we must bear in mind, which were set apart in the living bodies of the parents as specialized generative cells. It would be fully consonant with biological data, not opinions, for the inference to be made that the individual preceded and made possible the ultimate synthesis. Now, I do not at all say that these changes are produced by memory, for the "unknown factors" are unknown; whether a "dynamical theory of inheritance" is true; whether there are units bearing specific motions, or whether the very nature of the protoplasm compels in some mysterious way the formation of the body, I do not know, neither does anybody else, but I do know that the field is yet open for reasonable theories of any kind, not barring even that of a dominant unit of force unifying as its own the activities of the many.

If I indulge in a legitimate exercise of scientific imagination, until some clearer explanation has been given than has as yet appeared, of the movements and functions of the centrosome, I can even suppose that body to be in turn a congeries of vast numbers of its kind of varying values, units of infinitely small proportions, but as capable of having ascribed to them will and sensitiveness as is the atom, and of being laden with a weight of memories as great as that ascribed to the microscopically small ovum and sperm cells.

From such investigations as have been made

with the eggs of such lower forms of life as the sea urchin and thread worm, the segmentation of the egg is attended with the most marvelous activity of that exceedingly minute body, the centrosome, which seems in some inexplicable manner to preside over the separation of the cells and the partition of the chromosomes. Whether we are unable to see other bodies within it or not is not so material; inability is but a limitation measured by our capacity of sight as increased by the use of lenses.

Upon the entrance of the heretofore invisible (to the unaided eye) spermatozoön into the minute ovum egg, there appears accompanying it as a section thereof, or at least contained in a section thereof, an exceedingly minute body or point which, when the nuclei of the ovum and sperm cell coalesce into one nucleus, which they do speedily, takes up a position on one side of the nucleus.

It divides, or appears to be divided, into two, one of which goes to the other side of the nucleus, and then a figure is formed, the Karyokynetic figure, in which rays reach from the cytoplasm to the center of the nucleus proceeding from the centrosome on either side. From that the division of the cell commences, and the process is repeated on and on through the segmentation of the cells.

It has the appearance of dividing itself at each fission and supplying each daughter cell with a like centrosome, unless, indeed, we may suppose this remarkable body to be in reality a unity of units, and that what to a certain point appears to be the division of the centrosome is in fact a sep-

aration into numbers of existing units, which appear to view upon separation from the other by reason of rapidity of growth and expansion.

Of course I know the question of what the centrosome is has been discussed by the ablest biologists in this country and Europe, but while the question remains open, as I fancy it will for a while, as to whether it is an ultimate organ of the cell or, on the other hand, a derivative structure, I am at liberty to be true to my own thesis, that wherever life is there are many in the One.

The astounding supposition that in it may be many units of forces organic is no more a burden for the intelligence to carry than is the supposition that the germ cell itself recapitulates from its "unconscious memory" the history of evolution from unicell to vertebrate, recalls in synthetic order the fish gills, is burdened with "race memory," and finally stands forth with the recollections of parental characteristics, both physical and mental. Scripture advises the sluggard to "go to the ant," and I ask consideration for a moment of what George Romanes says about its brain (p. 46, "Mental Evolution in Animals"): "Knowing in a general way that mass *plus* structure of brain is necessary for intelligence, *we do not know how far the second of these two factors may be increased at the expense of the first.* (Italics mine.) And as a mere matter of complexity, I am not sure that even the brain of an ant is to be considered more wonderful than the ovum of a human being. . . . While in the case of ants, Dujardin says that the degree of intelligence stands

in an inverse proportion to the amount of peduncular bodies and tubercules."

Now, when we consider that with the highest powers of the microscope this remarkable center, the centrosome, is yet barely visible and recognized as a factor in segmentation of the cell more by what it does and by its attendant characteristic figure than by its size, we may well pause before pronouncing finally upon its nature and origin.

The cerebral activities of the brain are comparatively easy to map as to location, but when we approach the most potential and mysterious of all organized substance, the germ cell, we reach limitations, owing to the infinitesimal smallness of what we are studying. The results are big, the seat of the causes recedes even from the microscope's eye.

Is there any absurdity in the thought, then, that in this body, the centrosome, may be more than one potential unit of force, the manifestation therein of more than one individual?

As I have stated in another place, up to a certain number of cell divisions of the sea urchin's egg they may be separated and two or more smaller urchins produced; beyond that point selective synthesis has proceeded so far that the specialization of the units prevents any such results. The dominance of the one has prevailed; the unity is its; the living environment belongs to it; it remains the conscious unit of energy; it presides; it experiences; it is the individual in activity.

Shall such a supposition be shown to be an absurdity? Certainly not by the mere urging of a contrary opinion, but only by the reduction of our present working units to yet smaller ones, and even then they will appear as many in one. The old distinction between soul and body can in my view only be modified by modern science to the extent of analyzing the units of a living environment and leaving unexplained the underlying activity by reason of which it assumes the form it has. Either this, or there is no individual, and such a conclusion our consciousness contradicts. The old saying that "the body is not the man" may then well be paraphrased by "the environment is not the individual."

Prof. Alfred H. Lloyd has called the individual a "relationship." Professor Münsterburg, of Harvard, designates it as an "attitude," and because the word "relationship" appears to embrace more of the idea which I wish to convey of the individual, I have adopted the word in preference to the other.

Perhaps I am wrong in thinking that an attitude may be taken and never repeated of necessity, while a relationship is eternally self-existent, but if I am, I shall make no mistake in adopting the, to me, very pregnant word used by Professor Lloyd. From the nature of individuality every individual is apt egotistically to consider himself as something separate and apart from the rest of the universe of life. In a restricted sense this is true, but in a wider and it seems to me more gratifying one it is not true. Both from the revela-

tions of the microscope and the remarkable phenomena presented during a rather extensive study of experimental psychology I have become convinced that we have not given sufficient recognition to the position in *media res* which the individual occupies. In fact, it now appears difficult for me to understand what an individual is without at the same time embracing in the term the idea of many individuals.

Considered physically from the body of the mature man back to the last known analysis of the cell, he is a mass of millions of living units intricately associated together, to no one of which has it as yet been possible to ascribe the dominant ascendency, and if we were to attempt to look for the conscious individual in the midst of this vast concourse of physical units we should find ourselves confronting the necessity of finding some physical center of control which must be a unit to which all stimuli must report and from which all motive force must issue. The moment we endeavor to avoid this by the creation of a hypothetical synthesis, or by contemplating man as a syncytium, we have abandoned the physical side of the question so far as "physical" goes in biological terminology, as we are looking for unity of consciousness or self-consciousness.

Physically it is not difficult to construct a synthesis. We may conceive of the various centers as forming a community in which, while each is laboring for its self-preservation, its situation necessarily compels it at the same time to perform its functions for the benefit of others. There is

thus an exchange of force, an interplay of functional activity which makes it easy to build the synthesis.

When we undertake, however, the task of constructing a mental synthesis or rather a synthetic consciousness, we are confronted with insurmountable difficulties from the start. The psychical activities of the cell centers of the brain are not a common product, a sum total, unless, indeed, we are prepared as suggested before to admit of some one center in which all discharges or their psychical products are added together synthesized and recognized.

The same stimulus applied to the optic nerve and the auditory nerve results in entirely different products—one is light, the other sound. I do not know of any manner in which the cognizing center which receives the impression of light can report its sensation as light to the center which received the sensation as sound, nor *vice versa*. As I view a beautiful landscape, the sweet smell of the wild flowers salutes my olfactory nerves, the waving of the yellow corn, the mist of the distant mountain side, the sparkling spring pour their light into my eyes with a multitude of color effects to be recognized; the humming of the bees, the song of birds, and a dozen other sounds call for recognition. Different centers are reached; different effects produced. It may seem easy to say that the whole man perceives the whole picture, but what is the whole man physically or psychically? To lodge these various sensations in centers foreign to each other, though connected, each

speaking a different language, does not and cannot make one inclusive sensation.

This difficulty of constructing a synthetic consciousness has been recognized and conceded by no less a psychologist than Professor James, of Harvard University.[1]

Because of the comparatively unequilibrated condition of the cortical cells of the cerebrum and, therefore, their probable capacity to receive any and all forms of motion set up by sensation and to return again to their former condition as *tabla raza,* so far as sensation is concerned, they probably are the seat of the arranging and analyzing of this multiplicity of stimuli products.

This does not remove the difficulty, however, for there are millions of these cells that, while adapted to intricate connections, are yet separate and individual. If there is at last some one cell in which a final unification of consciousness resides, we may fall back upon even the physical perseverance of the cell microscopic, dried, and the sport of the winds, as is the case with some of the *tardigrada.* This, of course, is but the improbable but possible result if we seek for the individual consciousness as a unit in the material cells. The whole physical life is a living environment, a relationship of numbers. Where there are two, there is an invisible third uniting them; where three, the fourth and so on from the physical unit to the

[1] Since writing this book I have read Professor James's *Pluralistic Universe,* and I refer the reader to it for consideration of his present attitude on this matter, and also for information as to how this master views life from the psychological data.

vast concourse of atoms in the living man; thence on to the Unity for aught that all the deductions so far drawn from the data accumulated under the microscope and in the chemical laboratory may rightfully say to the contrary. The individual from this standpoint is never born, he is there when the unified living environment is there, and he is what he is physically because of where he is.

If, as contended by Cope, all development is preceded by effort, and effort imports energy, and energy is conscious, then the individual may be an energy form, a unit in that unity which so mysteriously energizes the ether or substance with a force unknown to our mundane physics.

The organic is not a result, an effect, but that by reason of which the organism is produced, it is inherent determinate force. So with the synthetic; it is not the result but a determinate causing force; the synthesis is a process and a result. Neither the organic nor the synthetic are in appearance at any time; they are above, beneath, within, and always unseen and untouched. The individual is and must be the same. He is never visible or tangible except in the forms of his activity; he is never born, he can never die. The synthesis of the two or any number of units is the product of the synthetic activity behind them, and it is immaterial whether that activity is mechanical or chemical, for, after all, chemistry is the mechanics of nature. The indisposition of materialistic scientists to in any manner recognize or acknowledge the reality of anything in the nature of spirit

or soul or mind transcending the known forms of matter and their action and interactions is, it appears to me, far more irrational than even the old-fashioned orthodox conception of a specially created soul. If the individual mind is the mere result of the "fortuitous concourse of atoms," then something has been produced which is different from atoms, greater than them, and, as an effect, greater than its cause, and which cannot be accounted for by the individual activities of atoms. To merely call it phenomenon gives us nothing but a word in place of explanation.

Even if we were able theoretically to resolve consciousness into units of sentience, Science has no formula which, without destroying the unit as such, can organize consciousness out of units of sentience, unless, as I have intimated elsewhere, we drive the sentience of the units finally into some one cell center which is no longer a unit but by reason of its unified consentience is a unity.

But this results from prejudiced attempts to account for the individual only by physics. Hydrogen and oxygen H^2O is water. Hydrogen is not water; neither is oxygen; but the product is a third something which is neither—it is water. That is tangible, visible third—and if by reason of the addition thereto of another proportion of oxygen the formula reads H^2O^2, we have no longer water, but another which is neither hydrogen, oxygen, nor water, but peroxide of hydrogen.

It is evident enough in physics that the construction of synthetic visible forms of motion is the measure of utility in many machines, but it is

because the forms of motion are compensated and modified and climaxed in an ultimate unit of motion which is localized and visible.

But this is precisely what we cannot do with the conscious cells as units. Each is more or less specialized, and by reason of its position and limitations is responsive to stimuli in a given manner and only so. If consciousness of light follows in one center of cells from a physical vibration of a wire, and a musical sound is the result of the same impulse in another, there must be either a third center which from them receives both and recognizes one cause with a variety of sensations, or we must abandon the attempt to measure the individual consciousness by physics and admit that the third is always beyond and transcendental to the two.

All this is metaphysical, to be sure, but then all that I desire is to record the conviction that notwithstanding our remarkable advance in science, there are yet fields unexplored and grounds for belief yet rational and undisturbed.

That the method by which a physical synthesis is constructed which mechanically operates as one will not result in the production of a soul is evident from Haeckel's own data.

Referring to the psychological phenomena observed in the formation of the blastula, he says: "The sensations also fall into groups: (1) The sensation of the individual cells, which reveal themselves in the assertion of their individual independence and their relation to neighboring cells (with which they are in contact, and partly in

direct combination, by means of protoplasmic fibers); (2) the common sensation of the entire community of cells, which is seen in the individual formation of the blastula as a hollow vesicle." Again, commenting upon some "modern representatives" of the earliest "cell communities," he says: "In all these cœnobia we can easily distinguish two different grades of psychic activity: (1) the cell soul of the individual cells (the 'elementary organisms') and (2) the communal soul of the entire colony."

It is easy to put into simple language and say, that, given a number of cells bound together by protoplasmic fibers and in contact with each other, we have each cell limited as to how, where, and when it shall move, by its position relative to those in contact with it and by the character and direction of the stimulus which causes the sensation.

Let one cell be stimulated, it will respond by its own specific form of motion only limited by its neighbors; it will forward the stimulation along the "protoplasmic fiber" connecting it to its next neighbors, each of whom will respond by its own specific form of motion limited only by its neighbors, and when all the cells receive the impulse, which they do practically simultaneously, the whole mass must move in one direction with a specific movement which is the synthesis of all these motions. This is mechanics, and all we have done is to bind together by "protoplasmic fibers" a number of cells which individually may move specifically and have created one general movement

which may have originated with any one of the individual cells.

No doubt the living environment of man does physically something similar, but how does that help us to create a soul? By increasing the complexity of the community by the introduction of cell centers and the ganglionic function we certainly never get away from the law which governs this primitive type, for we have simply multiplied the communities and increased the connections.

Let us suppose, then, that one cell in the community when touching a curved, smooth, hard object should be by its primitive simplicity able to be sensitive only to smoothness; let us imagine its neighbor gifted similarly with the faculty of sensitiveness to hardness, and yet another, the curved surface, and so on throughout the community.

The first one touches the object; if it thinks, its only thought is "smoothness"; it passes the impulse along to the next cell; this one then, if it could speak, would say "hardness"; the stimulation goes to the next and it will respond with "curvature." Now here we have three separate cells with their individual sensations, but by what process will the whole community rise up and say: "It is a smooth, curved, hard object"?

It may move away from it by reason of the hard impact or it may glide over it as the result of the curved smooth surface, but it will not be able to give any reason for it. No such process as this, however intricate the combination of factors

engaged in it may be, can account for the unity of consciousness or memory.

Haeckel himself clearly draws the line between facts and theories, between demonstration and "provisional hypothesis," and properly declares that "the man who renounces theory altogether, and seeks to construct a pure science with *certain facts* [italics mine] alone, as often happens with wrong-headed representatives of our 'exact sciences,' must give up the hope of any knowledge of causes, and, consequently, of the satisfaction of reason's demand for causality."

Yet notwithstanding his full recognition of this broad distinction between what is tentatively assumed and clearly demonstrated facts, he surmounts his structure, which is almost entirely founded upon tentative assumptions, with such capstones as these: "The belief in the immortality of the human soul is a dogma which is in hopeless contradiction with the most solid *empirical* truths of modern science," and "it was the gigantic progress of biology in the present century, and especially in the latter half of the century, that finally destroyed the myth."

I have prefaced what I wish to say further concerning the profound mystery of consciousness and its unity with this reference to Professor Haeckel's admitted position concerning the method by which a pure science should be constructed, because I think it will be apparent that he has been guilty of a violation of his own rule.

To a mind which is satisfied with a normal physical synthesis resulting from evolution and which

is capable of producing an effect astoundingly greater than any known cause, the chemical activities of the cerebral cells and the organs of sense may produce a "sum total" equivalent to all we recognize as soul.

In referring to the senses of man, Haeckel says: "In harmony with the great law of 'division of labor' the originally indifferent 'sense cells' of the skin undertook different tasks, one group of them taking over the stimulus of the light rays, another the impress of the sound waves, another the chemical impulse of odorous substance, and so on. In the course of a very long period these external stimuli effected a gradual change in the physiological and later in the morphological properties of these parts of the epidermis, and there was a correlative modification of the sensitive nerves which conduct the impressions they receive to the brain. Selection improved, step by step, such particular modifications as proved to be useful, and thus eventually, in the course of many million years, created those wonderful instruments the eye and the ear, which we prize so highly; their structure is so remarkable that they might well lead to the erroneous assumption of a 'creation on a preconceived design.' The peculiar character of each sense organ and its specific nerve has thus been gradually evolved by use and exercise—that is by adaptation—and has thus been transmitted by heredity from generation to generation. . . . Without the senses there is no knowledge."

Thus, then, without the evolution during millions of years, resulting in those modifications of

the conducting nerves and the development of the appropriate senses, there could be no knowledge. Possibly this would be true if the assumption that the individual, as well as his knowledge, consciousness and mind, was the product of such an evolution were true also.

Each individual is then a specific machine, and these products, consciousness and knowledge, can only come because of this intricate, inherited, evolved machinery.

I am somewhat puzzled, however, to know why knowledge, self-consciousness, and memory put in their appearance in abnormal cases where this essential machinery has been seriously injured, destroyed, and its coördination rendered impossible; where these inherited "correlative modifications of the sensitive nerves which conduct the impressions they receive to the brain" no longer remain, and where the final and most essential links in the chain of evolution are wanting.

One of the brightest scholars in the college which she has honored with her attendance is the well-known Helen Keller. Owing to serious illness when an infant of about nineteen months, she lost the use of all her sense organs except those of smell, taste, and touch; yet in spite of this fact she is a learned young woman, who is familiar with three languages, at least, and who in every study which she has undertaken has demonstrated that knowledge may be acquired on a large plan without all the senses, and, indeed, with only those which are usually considered the lower ones. Music reaches her soul, not through the ears, but

by means of the tactile sense only. The simple "sense cells" of the skin are sufficient to convey to her mind not only the mere physical vibrations of the musical instrument, but sufficient characteristic stimulation to arouse all the feelings, create all the enthusiasm, and produce all the evidences of similar emotion felt by the more fortunate mortal who is in possession of all the "soul cells" of a normal human being.

It is not my purpose to enter into any elaborate discussion of the phenomena in her case; I must refer anybody interested in the further study of the matter to Dr. Walderstein's work on "The Subconscious Self," and to her own story of her life. It serves my purpose to illustrate the contention that we by no means reveal the mystery of consciousness and memory by dissecting the organs by which they seem to work, and that we no more readily construct a synthetic consciousness which will account for it as we know it by building a physical synthesis of its ordinary phenomenal activities in the cells of the central system.

There seems to be something in the nature of the human individual which enables it to do in a few years that which it took the associating protozoa millions of years to accomplish. This individual appears to be able to get along, when necessary to do so, without the tools which evolution labored for ages to supply him with and to adapt, when essential, by substituting others for them.

It is conceivable that our senses are limitations rather than extensions, for the reason that spe-

cialization is limitation, and all use of the senses a specialization upon objectivities in ponderable matter. As we know little about the qualities of imponderable matter, our knowledge is equally small of our capacities therein.

It is this conscious unity in us all, and as I think in the universe, which appeals to me as giving form always to the unification which it transcends.

Without such an individual there is no explanation for that internal universe which has been constructed within the living environment, the grand multitude which awaits the command of the individual to paint the conscious dreams and to construct the syllogisms of individual life.

Whatever may be the method of storage of this vast congregation of experience and thoughts, it is evident that its character receives whatever value it has by reason of passing through the portals of the living environment of the individual. It is he who weighed, gauged, analyzed, and catalogued them, and he alone who can rationally utilize them. That a multitude of impulses are received and not perceived at the time of their entrance is an undoubted fact, but it is also a fact that their value does not appear until they are lifted to the level of the consciousness of the individual.

As the individual may select and cull from the multitude of objects in the environment without, rejecting from his attention the repulsive and disagreeable, so is he able to exercise the same deliberation and choice from those within. Both are environment—the great universe without which

bombards his senses incessantly with its colors, sounds, and odors; its never-ceasing, heaving, and surging impulses, its shadows and lights; indeed, all that goes to make up the visible, tangible universe; and the counterpart within which is the potential recapitulation of all through which he has passed. It is the history in full of his life; everything which he has encountered is builded into it; it is the living environment grown, developed, filled out, but it is not the individual. It, the internal, like the external, environment, bombards him constantly with its unnumbered impulses; as the external may not be avoided but insists upon making its impressions, whether in the light of consciousness or not, so do these from within. From without we see and hear and feel innumerable things of which consciousness knows nothing, and they are buried in the teeming abyss of the interior environment, to again steal past the portals of consciousness to the external as involuntary acts. The *individual* acts when from this lake filled by the sea he empties forth where and what he wills and selects, or when from the swelling sea without he invites to the waiting lake within some particular crested wave. Neither the sea nor the lake is the individual.

Whether these experiences and thoughts are of permanent value to the individual, whether they persist after the dissolution of the community of the living environment, is a subject which I may not discuss at this point, but will content myself with suggesting that perhaps thoughts themselves are attended with forms of motion. We may be

able to find them capable of rendering themselves potential in more than one place, and that at the same time. If so, we may say that at the dissolution of the community of units each takes its departure with what is its own.

Chapter IV

RELATIONSHIP

There is a host of reasons for holding steadfastly to the belief in the immortality of the individual to those who can recognize the force of George J. Romanes's suggestion that because we are only familiar with mind in association with brain it does not necessarily follow that that is the only form of substance with which mind is connected. We may postulate one universal mind, and, from the wondrous beauty, the play of forces, the unfailing regularity of rhythmic movements, the everywhere-present life, and the ethical advances of the world, hug the conviction that the world itself lives, "the world thinks"; yet we shall find from the very nature of mind itself, even from its kaleidoscopic combinations, strong grounds for asserting that the individual cannot be lost. When I say that the individual cannot be lost, I do not mean to hide behind a veil of transcendental mysticism and fail, as is too often done, to clothe this individual with consciousness, self-consciousness. Self-conscious individuality does not necessarily demand an attendant memory of the experiences of the past; it does include the past in the conscious present, however, and the capacity of recalling by association and relationship of ideas

the train of experiences which as prior causes have built up the effect of the present. Mind is a good forgetter as well as a good rememberer; a good specializer, as well as a good generalizer. The past may be drawn into consciousness by an effort of the will and by attention, but it presents itself always by association and relationship with the present whether we will or not.

All that I know of mind, its operations and its qualities, is measured by what I know of myself. I know nothing, but as I stand in the halls of myself and watch the play of lights and shadows cast there by objectivities about me, I can conceive of no qualities of mind which I have not; my definition of mind is given in terms of self-experience. All the learned and exhaustive works upon psychology are the results of self-analysis. No man knows what is going on in the mind of another except as he witnesses the phenomena of that mind and translates it into the reflection of his own. The qualities of mind are the same wherever we find them; if this were not so, there could be and would be no understanding of the motives of our fellow-men, no such thing as justice or practical government. We study and attempt to analyze the phenomenal activities of animals by reason of our recognition of this fact that the qualities of mind are the same everywhere. This force which animates us, which glistens in the eye, moves the muscular arm, springs in the tiger, and demonstrates its presence in all living things, is what we understand as mind, and its peculiar qualities are known to us only as our own meas-

ure of it is filled. Whatever may be the effect produced by the exercise of these qualities in diverse environments, they remain the same.

Mind may be, and there is much reason to believe it is, one great force-pervading substance. Abstruse and profoundly metaphysical as the thought seems, it does not appear to me to be exceedingly difficult to grasp that the consciousness of the one is absolutely dependent upon its parallel manifestation as the many.

Potentiality is but a word to cover the great fact that nothing can be added to or taken from the universe, and all individuals are therefore the output of what is and must be in potentiality eternally in the one mind. The life of the individual is therefore not to be measured in its mere objectivity in this environment, but in that which it really is.

Its individuality is necessarily an experience of the universal mind, its consciousness a part of that experience, and, being in the life of the one, is not and cannot be lost.

"The fortuitous concourse of atoms" is an explanation of phenomenal activities which our ignorance uses only when we have exhausted ourselves in scientific research along one avenue of investigation to the exclusion of others. To the man who allows the particles to blind his eyes to the force behind the flying dust, there probably is absurdity in the suggestion that the lives of the many are in the life of the One. To him, however, who can find in natural science, in biology, and in psychology evidences strong and convincing that

the mystery of life is redolent with mind, comes the assurance that the relationship, which makes his consciousness, his individuality, can, from the very law of relationship and association, never be lost from the mind of the one, but is an essential to its existence.

It has not appeared impossible to me to stand squarely upon the theses presented by Haeckel in his chapter on The Evolution of the World, and reach an opinion diametrically opposed to his concerning the value and immortality of the individual. Indeed, to my mind, he has presented hypotheses which result in strengthening the conviction long existent that the true monistic philosophy demands the indestructibility of the individual in its relation as such to the universe and the process of evolution itself. I shall try to give my reasons in this chapter as based upon the theses in question offered by Haeckel. Abbreviated, these theses are as follows:

"I. The extent of the universe is infinite and unbounded; it is empty in no part, and everywhere filled with substance.

"II. The duration of the world is equally infinite, etc.

"III. Substance is everywhere and always in uninterrupted movement and transformation; nowhere is there perfect repose and rigidity, yet the infinite quantity of matter and of eternal changing force remains constant.

"IV. This universal movement of substance in space takes the form of an eternal cycle or of a periodical process of evolution.

"V. The phases of this evolution consist in a periodic change of consistency, of which the first outcome is the primary division into mass and ether—the ergonomy of ponderable and imponderable matter.

"VI. This division is effected by a progressive condensation of matter as the formation of countless infinitesimal centers of condensation in which the inherent primitive properties of substance—feeling and inclination—are the active causes.

"VII. While minute and then larger bodies are being formed by this pyknotic process in one part of space, and the intermediate ether increases its strain, the opposite process—the destruction of cosmic bodies by collision—is taking place in another quarter."

The eighth lays down the proposition that the heat generated by the collision of these bodies "represents the new kinetic energy which effects the movements of the resultant nebulæ and the constitution of new rotating bodies."

Of course this is a theory, a scientific theory, based upon observation within the limitations of the senses, but for the purposes of this chapter I accept it.

We are not to think of a time when these two, ether and thinking substance (force), were spread out in infinity as quiescent or homogenous substances, but as set forth in III and VII, the process of transformation and organization (for the word organization applies here as much as to the concourse of atoms in my body) as going on eternally.

This eternal differentiation has to be assumed in order to get rid of the idea of an extra force, a creative Divinity. I do not think it accomplishes the purpose except as far as it may subtract the word "creative." These theses supply the very eternal conditions essential to the conception of an eternal thinking One and supply all the requisite qualities and quantities for eternal individuals whose number may not be increased or diminished.

In the first place, we have an eternal complication, an intricate combination of thinking substance and condensing ether. Such an eternal activity may well be an eternal mind, forever presenting itself as an eternal body; indeed, as it embraces all there is of mind, it could not well be anything else. The mere fact that the vast bodies of ether break up in other parts of the infinity is not an insurmountable barrier to the thought, for as we see in the theses, the heat generated thereby represents new kinetic energy for the construction of rotating bodies.

While we are called upon to try to think in the regions of eternal space and conceive the eternal conditions, we need not hesitate to suggest that for aught we know the vast infinity of ether crackling as "thinking substance" may be (and I think it is) the cerebrum of the One—all may be there, the history of the clash of spheres, the "collision of swiftly moving bodies," all of the changing pictures, may, as the epitomized history of my life repeats itself in memory, roll its majestic circle in this infinite abyss of "thinking substance" and

ether. What is the character of its subjectivity and objectivities? Who am I that I should go so far as to measure the infinite? I can no more "by searching find out God" than Haeckel by a word can give the "Lord God his *congé*." But I can see in Haeckel's provisional eternal substances just that which I have suggested, and more. As suggested in the Introduction, when I am told that there is a "tendency" in anything to move, even my comparatively feeble knowledge of physics compels me to understand by that that a force resides in that which feels the tendency and that what the tendency results in is the measure of the exercise of the force. Even if it were possible to conceive of the ether as undifferentiated, having a "tendency" to move, and about to be for the first time differentiated by countless infinitesimal centers of condensation, then, by virtue of the very law of force, it would condense in a determinate manner and a definite differentiation, and that would mean that the "thinking substance" in the ether which has a "tendency" to condense is differentiated and not homogenous.

Professor Haeckel dismisses Du Bois Reymond's second "world enigma," viz., the first "origin of movement," in these words: "In our opinion, this second 'world enigma' is solved by the recognition that movement is as innate and original a property of substance as is sensation." (P. 241, "The Riddle of the Universe.") Now the trouble is in getting my mind to the sticking point of the "recognition." "Innate and original" properties are as enigmatic as the

enigma which he tells us is so easily "solved" by them.

"Movement" is not demonstrated as an "innate property" of anything within our experience, but as the result of something else, and that is force, or, if it serves a better purpose to call it so, "thinking substance," and we know that any first movement is likewise definite as the product of definite forces.

If we are to consider "movement" as an "innate property" of substance, it appears to me that we must abandon the thesis that "forces are not communicated from one thing to another, but movements are."

If we are to think of "feeling and inclination" as the "active causes" of this differentiation of substance into countless "infinitesimal centers of condensation," we shall not, I apprehend, escape that enigma of Du Bois Reymond, What caused the first movement?

A substance, infinite, saturated with sensitiveness, in the absence of something to arouse its sensitiveness by stimulation of some sort, unless it remain quiescent, immovable, is unthinkable. The moment we supply that "something," force, it may respond exactly in commensuration to that force, and we have a commencement of differentiation with a tendency to return to equation.

But when, as is the case with the thesis presented by Haeckel, this differentiation never commences, but is eternal (this being his only reply to Du Bois Reymond), then we have no longer the reason for assuming this "force," this "thinking

substance" as being a unit, merely a force, but rather unity of units of force, the force of forces, eternally. The "infinitesimal centers of condensation" of substance would then be eternal, indestructible motion forms in the ether.

A universe constructed on these theses without this recognition of units of force would in the course of eons run down and equate itself.

Unless what Professor Haeckel means by the "division into mass and ether—the ergonomy of ponderable and imponderable matter," is covered by the expression "motion forms in the ether," including continuity of the ether into every part of the mass, it will be difficult to see how the "intermediate ether increases its strain," or how there could be any strain at all.

Assuming these "infinitesimal centers of condensation of the ether," these units of force, these individual forms of motion in the ether to be thus in the substance, a continuity of the substance, and not detached from it, and there is a strain, an eternal strain, and the basis for a belief that the relationship is eternal.

What an immense complexity of relations is thereby established, what immeasurable capacity for thought, consciousness, and memory, and a means of intercommunication as far transcending the human nerves as the traverse of light transcends the rapidity of sound waves, we do not know and cannot know. Referring again to Romanes's declaration that it is a *non sequitur,* that because we only know mind as associated with brain, therefore there is no other form of mind, we find

mind associated in us with ganglionic centers, but Romanes in an experiment made upon the Naked-eyed Medusæ found that the manubrium or tongue of the bell-shaped animal would deflect toward the exact spot which he irritated on the edge of the bell or body. Thus far the existence of ganglionic centers was assuredly known, but he cut out the manubrium or tongue and to his astonishment found (as he says on pp. 110-111, "Jelly Fish, Star Fish, and Sea Urchins") that "no matter how small a portion of this organ I used, and no matter from what part of the organ I cut it, this portion would do its best to bend over to the side which I irritated. . . . We have here, then, a curious fact, and one which it will be well to bear in mind during our subsequent endeavors to frame some sort of a conception regarding the nature of these primitive nervous tissues.

"The localizing function, which is so very efficiently performed by the manubrium of the Medusa, and *which if anything resembling it occurred in the higher animals would certainly have definite ganglionic centers for its structural correlative* (italics mine), is here shared equally by every part of the exceedingly tenuous contractile tissue that forms the outer surface of the organ."

Now this is a diffusion of ganglionic function, not a mere sensitiveness such as in the lowest orders of life withdraws its substance away from the irritation.

That may or may not be suggestive of a little consideration of the thought that, because we are

accustomed to perceiving the exercise of the ganglionic functions as associated with definite ganglionic centers, it does not necessarily follow that ganglionic function may not be exercised without such centers, and hence, to go further, that because we are accustomed to find mind so associated, it does not necessarily follow but that it may exist not so associated.

Possibly Haeckel does not consider that this opinion of Romanes's bears upon an "important" point in the monistic philosophy, and therefore may not wish to be taken as "at one" with him in that matter; but when Romanes tells us that because we are only familiar with mind in association with brain it does not necessarily follow that that is the only form of substance with which mind is connected, he does not have in view Haeckel's idea of incipient mind or mere "mind stuff." This is evident when we recall that Romanes suggests that such a mind may so transcend the human as to be a form of mind beyond our analysis. This is a difference from Haeckel upon a very "important" matter; indeed, it involves the very soul of Haeckel's work.

Consciousness of abstract things requires life in abstract things; we actually build them into ourselves and they are our living environment. As I have gone at length into the subject in the chapter on The Living Environment, I will not multiply words by discussing it at this point. Standing squarely upon the idea of the One as being the foundation of true Monism, I insist that as we also find the many, and as we likewise are aware that

mind as we know it is one in character, notwithstanding that we find it expressing in many, we are justified in assuming the one mind to be in its operations similar to that mind with which we are familiar in the many.

When we consider the Universal Mind we find reasons to believe that just that character of associated objectivities existing in the human mind in unbroken association and relationship makes the living environment of it, and just that character of associated ideas found to constitute the conscious memory of the human mind is in unbroken association and relationship in *it.*

I think it is evident that in the case of the individual human mind the consciousness of the One, the individual, is dependent upon the parallel consciousness of the many. We are in the world of vast differentiation, active in millions of cortical cells, each of which, as we have endeavored to show elsewhere, is a unit in itself, and our consciousness of the world is dependent upon the unification of these. This is not equivalent to admitting what is asserted by Haeckel, that the sum of their activities constitutes consciousness, but quite the contrary, that the unification of their activities provides us with the object of consciousness. Sleep comes with its apparent loss of consciousness when the senses cease to receive impressions from without, and the connections of the cortical cells are withdrawn from each other within.

In sleep the many prevail; in wakefulness to the world the one. That this is comparative and not absolute is within the experience of us all.

So far as we know, for untold eons of time infinite space has been filled with the evidences of the many; our knowledge of the vast systems upon systems which fill it is, great as it is, exceedingly limited. Certainly all we know is based upon the uniformity of law, the loyalty of force, and the evidences of unity. Here on this little world, our environment of to-day, we find mind, and it is one thing, one force, loyal to its law, and it does not require undue effort of scientific faith to grasp the conception that it is the same coextensive with all its manifestation in the universe.

The one and the many may be rationally conceived as ever in existence. Time and Eternity may keep the one and the many in eternal balance of unification so far as our present scientific investigations can inform us.

What we know as the association of ideas is, otherwise expressed, the law of relationship. We are also all tolerably familiar with the phenomena of associated memories. The odor of the carnation will, with the passing of a second of time, bring into the present the dim and misty past; all that went with the fragrance of the pink, however small a part it may have itself played in the experience, comes trooping to the memory—houses, rooms, familiar faces of the past, long-forgotten voices, feelings, griefs, pleasures, all are so linked together that they form one picture in the now. Such associative links will even thrust before the memory facts to the nonexistence of which, without the suggestive link, we would take our solemn oath.

This law of relationship, it is not irrational to assert, is the law of mind, and if such be perceived to be its action in your mind, there are no scientific data which demand of you that you deny it to the One Mind.

"In Him we live and move and have our being" is more than a religious assertion; it is a scientific declaration.

The One Mind is infinite, true, but it is because of this that I insist that we cannot be taken out of it. Its infinity is ours; it surely has not less than my mind, and while we must acknowledge that its intellect is so transcendentally beyond our conception as to be a mystery, yet its hold upon all its relationships must likewise transcend our experience.

Chapter V

THE WITNESSES

The weight of a great name usually lends force to an expression of opinion on any subject of general interest, and we are sometimes given to unreasonably yielding our own views on that account. Anything Mr. Gladstone might have to say concerning the inspiration of the Scriptures, the divinity of Christ, or the ethical value of the phonograph was hailed with approving nods a few years ago, notwithstanding the fact that his transcendent greatness consisted in qualities of mind bearing in an entirely different direction. We do not think sufficiently for ourselves and lean too confidingly upon others merely because of their prominence in the world of thought, no matter how that prominence was obtained or in what field of labor. For instance, the views of ex-President Harrison concerning the relations which should exist between the United States and her possessions in the Atlantic and Pacific oceans have profound value, and ought to have, expressed as they were by a man whose whole life training had qualified him to form rational conclusions on the subject, but his opinion as to the probability of communicating with the possible inhabitants of Mars might or might not be as valuable as yours or mine.

When such a grave question as the one upon the answer to which hang the hopes of all humanity is propounded, any opinion adverse to the inbred expectancy of the human mind should be expressed at least tentatively and with hesitating modesty. It should never be clothed in the brazen armor of dogmatic assurance, nor confidently asserted even, until all probabilities as to individual immortality are exhausted.

Even if the whole faculty of physicists and psychologists should assure us that there was no other alternative, we would yet have the feeling that, after all, they are but men like ourselves, confessedly by their own theories but expressing the evanescent products of machines, and have not reached any further into the mystery of being than you or I in our own consciousness.

It is quite a cheering thought, nevertheless, that the scientific thinkers do not agree in such a conclusion as Professor Haeckel has reached; quite the contrary; and, strange to say, as he frankly admits in his own book, the older they grow in their work the wider the field of their mental vision, the more voluminous the data which they gather, usually the more convinced are they that the conclusions to which they leaped eagerly in the freshness of youth were prematurely reached and rested on an insecure foundation.

Nearly every man of great scientific attainments in biological, physiological, and psychological researches has found it convenient and sometimes necessary to write something about the immortality of man. It is a subject which suggests itself

frequently in the study of the origin, development, and life of mankind, and I have, like many others, interested myself deeply in the task, a pleasurable one, of discovering how these great thinkers viewed that question, and have been contented in finding that just as there are always conflicts of opinion upon scientific constructive theories, so there are in relation to this. If you are prone to believe that our biologists are a harmonious family in relation to the conclusions to be reached from the facts ascertained, or even as to the meaning of the phenomena themselves, you have but to read the theses of the various writers upon the subject, or the lectures delivered from time to time at the laboratories, to find out for yourselves that while great strides have been made, the meaning of the wonderful egg and its characteristic activities is largely a subject of discussion by learned men with divergent views. This is likewise the case in the field of psychology, although we certainly have approached nearer to the time when it may properly be called a science.

The scientific world is really in too much of a hurry; just as it has for the first time in a few thousand years of man's history begun to open the cases of Nature's sealed mysteries, the first few cans have so swelled its dignity that it is too much inclined to assume the attitude of knowing all about it. The world has but commenced its era of science; it yet rocks the cradle of experimental knowledge; it has but outlined the tremendous future, and many of the pioneers in this

wonderful work, as they cool down in their declining years, fully realize these facts and have the courage of their greatness to come forth and say so before the great doors of the Hereafter clang behind them. They admit their ignorance of some things and ask the world to wait.

The idea of another life, immortal, freed from the distresses, crosses, and suffering of this, with the associated idea of a God, is an old one. It has inspired the poet's song; has been the theme from which all the grandeur, sublimity, and power of harmony in modern music drew their vitality. Mozart, Handel, Haydn, all voiced their great hope and ideal of mankind. It gave to the world its first impulse in painting. Michelangelo and Raphael threw this expectation of humanity upon the screen in living colors; it has fired the soul of eloquence; it has been the warp and woof of human government, and has been enlarged, belittled, distorted, modeled and remodeled, diluted and crystallized in creeds by theologians—it is old. It has no longer the charm of novelty. Science *has*. Its new light has for a time, and will for a greater time, outshine the old, and it is not strange that in the freshness and vigor of youth, with the prizes of fame and preferment alluringly held up before them, the students of science should find in its newness, its fresh impulses, its novel revelations, its doorways opening into strange paths, a substitute for the old. They seem to forget that even the doctrine of Monism is inclusive, and that the universe is still sparkling with many facets.

The results of this newness of modern science are not novel in the world's history, for every new departure, whether in literature, art, music, poetry, government, economics, or education, has commenced in just the same all-absorbing, exclusive, repudiating, self-assertive manner. Such changes in the direction of the world's thought push everything else out of the way for a time, but this cannot and does not last.

The world has its rhythm; it is much like the man; its progress is in the attaining of the new, but it always retains the old, and eventually builds it into its life.

The new is almost always exclusive in its effects upon its possessor, and it is difficult to find a human being who is not compelled, because of his greater tendency to specialize than to generalize, to subscribe to some ism. Isms are always exclusive, and by their formulated rules compel a repudiation of anything which appears to be antagonistic.

Now, when we come to the constructive work of modern science, we find that it is of necessity first destructive. It cannot easily build upon the old foundations; biology abandons Bonnet, and psychology has little use for the works on mental science of the early part of the nineteenth century. But this abandonment is for science and for scientific purposes only; it is not because there was no truth in the old masters, but because it is easier and perhaps more conducive to the attainment of harmony to put the wine in "new bottles." In this work of construction, among the useless ma-

terial is seemingly found the idea of God and immortality, but that is only because modern science has not builded up to its capstone quite yet. The sound of contesting languages is not yet over; there are indications of Babelistic confusion of tongues even now. This will not last, but possibly it will be found finally that the "stone which the builders rejected" is the "chief stone of the corner."

The greatest achievement of modern civilization has been in the development of the spirit of toleration, and, as Professor Haeckel justly claims, the marvelous progress of Science owes its impetus to the full untrammeled liberty conceded to thinkers to express themselves without fear of the rack or the stake. It is certainly true that enlightened people do not any longer hurry such men as Giordano Bruno and John Huss out of the world in a blaze of glory, nor does the holy inquisition seek its victims among the unbelievers and heterodox. The days when to express an opinion adverse to the ruling of the ecclesiastics was equivalent to signing one's own death warrant have departed, probably forever. Such erudite and intellectual giants as Haeckel, Spencer, Huxley, Darwin, Wallace, Lodge, Crookes, James, and many more who tower above all others in their special fields of labor, have found the nineteenth century a most fortunate and advantageous era in which to live. Their privilege to speak, their opportunity to be heard, the respect with which their utterances are treated, are all owing to the spirit of toleration and the fact that the

general level of intelligence has slowly but surely risen. Yet I am very certain that there are strong indications that the same spirit which, when in its unbounded and unlicensed cruelty, found an opportunity to glorify God by burning at the stake such as refused to wear the yoke of orthodoxy, prevails to a great extent to-day. I mean to say that persecution is a weapon as freely used in this day and generation as ever it was in the history of the world, but its wielders are no longer the Church and the priests alone, but the scientists themselves. Not all, but some. It is remarkable, too, that the victims of their wrath and intolerance are of their own number. Broadest of all men should the true scientists be, and broadest of all men the true scientist is. Yet we are to-day face to face with the fact that if a thinker thinks too far, so far that he is unfortunate enough to get a trifle away from the beaten path of a cult or a theory or a school, he must make up his mind that his worst enemies and most uncompromising antagonists will be those of his own school of science.

"Orthodox" and "heterodox" are rather curious words to apply to science, yet they have crept into our vernacular in that association.

Science is knowledge, knowledge acquired by and through the use of the senses; it should fling wide open the doors which give ingress to data; there should be no such thing as forbidden fruit, and no fences across rights of way. Merely because we have accepted a theory as in all probability a rational one because based upon facts which

appear to demand it, we should not shut out eyes to other pressing data which seem not to fit into the theory; neither should an investigator be compelled to go into Coventry because he happens to be the one who sincerely believes that he has evidence of the existence of such facts.

Evolution and Monism are widely accepted today as rational hypotheses; indeed, they almost approach demonstration; but the fact that they just fail of absolute demonstration leaves always open the possibility that, after all, they may be entirely unfounded and erroneous. But even conceding that they have all the force of demonstration, yet they are very inclusive, and have not as yet entirely explained the workings of the Universe, and presumably never will.

It is a matter of profound regret that the mysterious realm of psychic phenomena, telepathy, and what is commonly known as spiritualism, should be not only unknown territory to Science, but unrecognized and forbidden.

In common with most other men who feel that nothing is so vulgar that it will not bear investigation, I had hailed with delight the advent into the field of the occult of men of such standing in the scientific world as Wallace, Crookes, James, Lodge, Myers, Hodgson, and Hyslop, because I felt that they would be able to make such thorough and unflinching investigations as would reveal either its absolute worthlessness or its profound value.

How have the results of the efforts of some of them been received by the scientists? With

contumely and contempt. Haeckel voices the opinions of many scientific men when he considers that they have been led astray by "excess of imagination and defect of critical faculty."

Now the modern theory of evolution owes fully as much to Wallace as to Darwin, yet nobody ever considered it necessary to charge him with "excess of imagination or defect of critical faculty" in connection with that matter. It required a keen observer and one possessed of critical faculty of a high order. If this is not so, of what value is all his labor in gathering data tending to sustain the evolutionary doctrine?

Crookes and Lodge certainly appear to transcend most of their contemporaries in physics, yet the same faculties which gave them their position in the scientific world become "excess of imagination" the moment that they apply them to the study of anything which is unpopular and heterodox to Science.

These abnormal phenomena demand explanation, and so long as they remain unexplained by Science they are standing obstructions to the demonstration of anything by Science concerning the psychic side of life. If they are uncertain and spasmodic, then those elements are to be read into the scheme of evolution and Monism, and it no longer remains true that Science is positive and definite in its analysis of life.

It is a simple matter of a few words for a scientist to declare that telepathy has "no more existence than the groans of spirits," but what do

words amount to in the solution of such a question? Many men of no mean attainments say that it does exist, and that they have proved it. If it does exist, it very materially affects the attitude taken not only by Haeckel but others as to the properties of the etheric substance and the modification of the forms of motion in the cerebral cells by stimuli reaching them by channels other than via the senses. Unsolved, it remains a possible contradiction even to the monistic conception of brain and soul as presented by Haeckel. Probably that is why it seems to have no more existence than "the groans of spirits," for it might require a rather serious alteration of the whole schematic framework of mechanical life. Personally, I regard such men as James, Lodge, Crookes, Hyslop, Wallace, and the others whom I have mentioned with profound admiration, for I think that the consideration of such matters belongs preëminently to Science. It is not strange when we recall how some of them have been treated by the "orthodox" among the scientists that these men hold a warm corner in the hearts of the people. They are bringing their precise and logical methods to bear upon questions of vital importance to humanity, and whatever their ultimate decision may be, it will be received with respect.

Why have I indulged in this strain of philosophy? Because I have in mind a much more rational explanation than Professor Haeckel for the recantation on the part of so many of the masters in science who have enjoyed (?) the felicity of

standing with him in his, to me, hopeless views of life and its meaning.

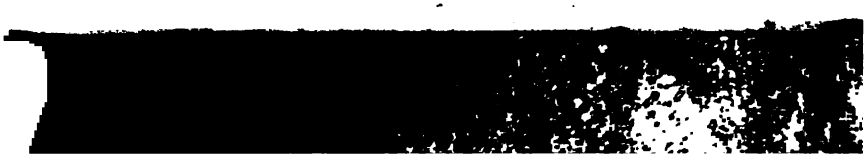
I quote first from Haeckel himself (p. 93, "The Riddle of the Universe"):

"Rudolph Virchow, the eminent founder of cellular pathology, was a pure Monist in the best days of his scientific activity. . . . Virchow published his general biology views on the processes of man, which he takes to be purely mechanical natural phenomena." I have abbreviated the quotation, for it speaks for itself in the chapter on the Nature of the Soul. It is sufficient to say that twenty-eight years afterwards Virchow "represented the diametrically opposite view."

E. Du Bois Reymond, whom Haeckel calls one of the "most famous living scientists," after having done his great part in the destruction of transcendentalism and vitalism, recanted, and declared that consciousness was an insoluble problem.

Haeckel cites a similar change from the mere mechanical theory to the spiritualistic on the part of the great Wilhelm Wundt, whom he calls the "ablest living psychologist." To them he adds Kant and Baer, and suggests even others who after having found all the truth, found some more.

I am at this point constrained to say that even George John Romanes, whose opinion seems to Professor Haeckel to coincide with his own (perhaps he does not mean concerning immortality), gave strong evidences of an approaching change in his views, if indeed any change was necessary,



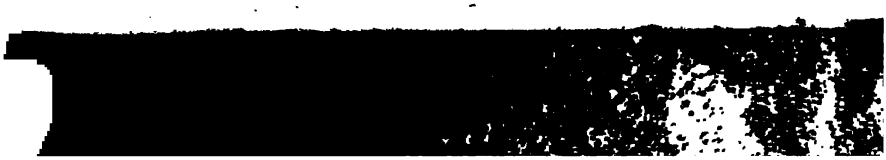
shortly before his death, if the preface to the posthumous volume "Mind, Motion, and Monism" is of any value as evidence. I quote the words of C. Lloyd Morgan, principal of University College, Bristol: "The subjects here discussed frequently occupied Mr. Romanes's keen and versatile mind. Had not the hand of Death fallen upon him while so much of the ripening grain of his thought still remained to be finally garnered, *some modifications and extensions* (italics mine) of the views set forth in the 'Essay on Monism' would probably have been introduced. Attention may be drawn for example to the sentence on page 139, italicized by the author himself, in which it is contended that the will as agent must *be identified with the principle of causality.*

"I have reason to believe that the chapter on the World as an Eject would, in a final revision of the essay as a whole, have been modified so as to lay stress on this identification of the human will with the principle of causality in the world at large, a doctrine the relation of which to the teaching of Schopenhauer will be evident to the students of philosophy."

It is with a considerable degree of confidence in the correctness of my understanding of the testimony of Professor Romanes that I quote also from the volume of his "Essays" edited by Prof. C. Lloyd Morgan, and particularly from the paper entitled "Mind in Men and Animals": "On the side of its philosophy I am in complete agreement with the most advanced idealist, and hold that in the doctrine of self-consciousness we each

of us possess not alone our only ultimate knowledge, or that alone which is 'real in its own right,' but likewise the only mode of existence that the human mind is capable of conceiving as existence, and therefore the *conditio sine qua non* to the possibility of an external world. With this aspect of the matter, however, I am not here concerned. Just as the functions of an embryologist are confined to tracing the mere history of developmental changes, and just as he is thus as far as ever from throwing any light upon the deeper questions of the how and the why of life, so in seeking to indicate the steps whereby self-consciousness has arisen from the lower stages of physical development, I am as far as anyone can be from throwing any light upon the intrinsic nature of that the probable genesis of which I am endeavoring to trace. It is as true to-day as it was in the days of Solomon, that "As thou knowest not how the bones do grow in the womb of her that is with child, thou knowest not what is the way of the Spirit."

What the particular individual views were which these great men finally held does not concern us in the discussion, because the object of this book is not to present a new or an old special theory, but merely emphatically to combat the assertion that the individual has been proved to be scientifically mortal, or the imagination that any proof exists which is at all of a character to disturb our spiritual equanimity. I only desire to show that these masters of science when the fire for making bricks had burned down found that they had good



bricks, but that the plans of the building which some of them had in mind showed bad architectural designs.

My reading of physiology has taught me that it is difficult, for some of the very reasons set forth by Professor Haeckel in his general analysis of the cellular brain, for men past the prime of life to change their habits of thought; hence, they rarely are able to acquire a new art or learn an unfamiliar language, but adhere to the ideas formed in earlier life. Most old men live much in the past, the sensitivity of the cells is not as keen, new sensations fail to arouse them, and the current events are not so interesting.

"The power of visualization is lost, pleasure in music disappears, memory becomes weak *save in narrow lines* (italics mine); a new language, a new science, or a new handicraft appears as a very serious undertaking, and, as a rule, is only indifferently acquired." (Donaldson, "The Growth of the Brain.")

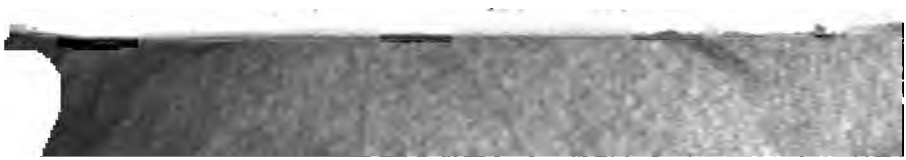
How often, may I ask, do we find a politician changing his party lines in old age? Or a churchman his creed?

I may be permitted to suggest also that these men so criticised by Haeckel were of unusually strong intellects, concededly so, and if they did achieve the new, recast the old, cease to think on former lines, it was because they were giants and exceptions to the general rule and hence exceptions to Haeckel's rule of senility.

It is hardly consistent to suggest that these scientists changed from their early positions, pos-

sibly because of the approach of old age, and, in addition, to advance as a reason for the spiritualistic tendencies of such men as Zollner, Fechner, Wallace, and Crookes the suggestion that they have been led astray by the "powerful influence of dogmas which a religious education printed on the brain in early youth." The rule ought to work either one way or the other—either early impressions should prevail in old age or should not.

If "purified monism" has returned "after a lapse of two hundred years" to the "profound thought of Spinoza," I question whether we may not be compelled to look elsewhere than to "The Riddle of the Universe" to find the evidences of the return. Not that I doubt the fact, but fail there to find the evidences. The solution of "The Riddle of the Universe" as presented by Haeckel strikes me as a far reach away from the majestic thesis of Spinoza. Contrast the absolute denial of any individual immortality presented by Haeckel in his statement that the "Godless world system" of Atheism "substantially agrees with the monism or pantheism of the modern scientists" and his express limitation of his conception of immortality in these words, "When we take the idea of immortality in the widest sense and extend it to the totality of the knowable universe, it has a scientific significance; it is then not merely acceptable but self-evident to the monistic philosopher," with the propositions of Spinoza. Prop. XXI (Part V, The Ethics): "Nevertheless, in God there is necessarily an idea which expresses the essence of this or that human body under the form of eter-



nity." [1] Prop. XXIII: "The human mind cannot be absolutely destroyed with the body, but there remains something of it which is eternal."

A portion of Spinoza's note under the last proposition reads as follows: "But notwithstanding, we feel and know that we are eternal. For the mind feels those things which it conceives by understanding no less than those things which it remembers. For the eyes of the mind whereby it sees and observes things are none other than proofs. Thus, although we do not remember that we existed before the body, yet we feel that our mind, in so far as it involves the essence of the body, under the form of eternity, is eternal, and that thus its existence cannot be defined in terms of time or explained through duration." Prop. XXXIX: "He who possesses a body capable of the greatest number of activities possesses a mind whereof the greatest part is eternal."

I quote also from a letter of Spinoza to Oldenberg (Letter XV) for fear that these propositions may be considered as standing by themselves not a satisfactory expression of Spinoza's monistic idea of immortality of the individual mind: "As regards the human mind, I believe that it is also a part of nature; for I maintain that there exists in nature an infinite power of thinking, which, in so far as it is infinite, contains subjectively the whole of nature, and its thoughts proceed in the same manner as nature—that is, in the sphere of

[1] All the quotations from Spinoza in this book are from the translation by R. H. M. Elwes in Bohn's edition of the "Chief Works of Benedict de Spinoza."

ideas. Further, I take the human mind to be identical with this said power, not in so far as it is infinite and perceives the whole of nature, but in so far as it is finite and perceives only the human body. In this manner I maintain that the human mind is a part of an infinite understanding."

The spiritual feeling which pervades the works of Spinoza, notwithstanding the cold, formulated propositions in which his philosophy is set forth, bears a striking contrast to the pessimism which colors the ethics of Haeckel. However little we may agree with Spinoza, his work makes upon us a profound impression; we feel the earnestness and human sympathy which warms it, while, on the other hand, one leaves "The Riddle of the Universe" depressed and filled with wonder that even if the doleful conclusions of the whole matter were true, and Haeckel a final judge of the case, he should have felt it necessary to write it. In any event, Spinoza, it seems to me, was a poor witness to summon.

I take the liberty here to quote a few lines from Professor Shaler's recent work ("The Individual," p. 304): "The point is that we know properties of matter are so complex and our ignorance as to the range of these properties so great, that the facts of death cannot be made a safe basis for a conclusion as to the survival of the intelligence."

These words and many more are cheering and hopeful coupled with the true scientific mental attitude of expectant waiting.

I shall not multiply the pages of this chapter by further quotations, but content myself with the

suggestion that advanced scientists, with hardly an exception, find in their widening field of knowledge great and cogent reasons for waiting before springing the trap which executes final judgment upon the hope of the world.

In the note to a lecture upon Immortality delivered by Professor James, of Harvard, he expresses surprise that, contrary to his expectations, he could not find in recent scientific books a single positive denial of man's possible immortality. He had not at that time the opportunity of reading "The Riddle of the Universe."

Chapter VI

CONSCIOUSNESS AND PAIN

As an introduction to what I wish to say regarding consciousness, I shall put and try to reply, to some extent at least, to a question which has often been asked and remained unanswered to our satisfaction: What is pain?

Probably, like many other queries, this will remain unsettled just to the degree that we are unable to explain what consciousness is, but I think it will yet be evident that just so far as we are able to understand what consciousness is, we shall have a comprehension of the nature of pain. I believe there is reason to consider pain as a phase rather than an object of consciousness itself. I might define consciousness as the sense of effort, and pain as the consciousness aroused by the disturbance of automatic action. Professor Cope, in "Primary Factors of Organic Evolution," says: "Whatever be its nature, the preliminary to any animal movement which is not automatic is an effort. And as no adaptive movement is automatic the first time it is performed, we may regard effort as an immediate source of all movement. Now, effort is a conscious state, and is a sense of resistance to be overcome. When an act is performed without effort, resistance has been

overcome, and the mechanism necessary for the performance of the act has been completed. The stage of automatism has been reached."

As the same author has in another place suggested, that energy become automatic is unconscious, we are able to conceive the effort to have been conscious in the long stages of evolution in building up the complex machines within machines which constitute what I have called the living environment; desire producing effort, effort leading to adaptation, and the resulting adaptation becoming automatic, and, therefore, unconscious. We can readily comprehend, as he suggests, that the heart, the lungs, the stomach, and all the organs were brought into existence as such consciously, and thereafter performed their functions automatically.

If this be a reasonable theory, and it seems to me to be such, then any disturbance of the automatic movements of these organs or any organs of the body results in an awakening of consciousness in the repair of the injury causing the disturbance. Such repair is a revival of effort, the same in kind as the original effort which created the organ, and not being effort directed rhythmically in response to repeated stimulations, is effort demanded suddenly and out of the regular procession of evolution. All such effort is a state of consciousness, and as consciousness may be said to have abandoned the processes of the organ in its automatic condition and to have been directed regularly in order to efforts in response to stimuli upon the periphery of the living environ-

ment coming from the external and assailing it from many points, its sudden and unwonted direction to the demands of repair in the hitherto automatic center results in a centralization, or rather a specialization and intensification of consciousness in one direction. To all efforts of energy which demand specialization of consciousness just to the degree of expenditure of energy, we give the name of pain, or its opposite, pleasure. If the specialization is in the direction of the attainment of the new, we call the consciousness pleasure; if directed to the rehabilitation of a disturbed automatism, we call it pain.

Such a unit of force as we have conceived the individual to be is limited, limited to what it is in itself, and it is only by virtue of the successive layers of automatic centers in its living environment that it may be said to always be able to utilize practically its entire consciousness in the acquiring rather than the retaining. The withdrawal of it in any degree from this creative, organizing field of effort and its specialization upon the reorganizing is pain.

Perhaps I may make the idea clearer by saying that in this view, ecstasy, pleasure, and pain are but so many gauging marks upon the thermometer of consciousness. The touch of the point of a pin may be pleasurable, a slight prick by it annoying, because consciousness is to a degree withdrawn from its generalization and more or less specialized, while the deep penetration by the instrument would be pain. This is all, however, the expression of the degree to which consciousness

is withdrawn from generalization to specialization by effort on the part of the particular center in doing over again what it has done in organizing the automatic action of the epithelial cells.

Pain and pleasure are but names for direction and degrees of consciousness. They are one and the same thing—consciousness. The beating of my heart is an automatic movement, and I am unconscious ordinarily of it, but if I direct my attention fixedly to it, the rhythmic pulsations become disturbed and there is more or less pain as a result. The act of swallowing is automatically performed by the muscles of the esophagus, and I am unconscious of their movements under ordinary circumstances, yet if I pay attention to the act of swallowing and attempt to analyze the process, I shall find it exceedingly difficult to resist the desire to expel the food or liquid which I am attempting to swallow; there is pain.

Pain is only possible when there is a degree of generalization on the part of consciousness.

If the disturbance of the automatic process is sufficient to centralize the entire consciousness of the unit of force, unconsciousness results, and we find an evidence of this in the fact that the individual succumbs at a certain point and syncope or fainting results. If the consciousness be withdrawn by artificial helps, from generalization, as in the administration of anæsthetics, there is no pain, and in true sleep, however induced, whether naturally or by hypnotic suggestion, there is no pain. From this position we should not say "con-

sciousness of pain," but "consciousness is pain." To attempt to explain the absence of pain in such a state by merely saying the individual is unconscious is to give but half an explanation. It appears more probable that the individual cannot carry the weight of such a centralization of consciousness, and hence there is an inhibition of the connectivities between the sense organs and the cerebrum.

A man suffering severe pain, and who at the same time is in the condition which we usually call conscious, has but a feeble power to generalize. He exhibits a disposition to avoid conversation; he cannot read with profit; he is unfitted for business, and there is a general incapacity for thought; consciousness is otherwise engaged; it is specializing upon a work which is a return to the organization of automatic processes.

I have said that conscious effort in acquiring the new is pleasure, and it may be objected to this that there is also pleasure in repeating the old, and likewise pain sometimes in acquiring the new. To this I shall suggest that if by repeating the old is meant the reviving of past sensations, we do so by building them upon the basis of the present; they are never the same as they were before; they are added to the horizon of our environment as new factors. In acquiring the new there can be no pain unless in the acquisition there is a disturbance of the automatism and therefore the necessary readjustment. There is no pain except where consciousness is comparatively withdrawn from the external world environment of objects

and an unwonted consciousness of the living environment of the body aroused.

The peace and pleasure of the individual depends upon the harmonious, undisturbed action and interaction of his living environment.

Such a theory as I have outlined to explain the nature of pain would more rationally lend support to the conception of the unit of consciousness as the synthesizing force rather than the synthetic product of the activities of the cells. The progress made by physiological and biological investigation in the vast complexity of cells in the physical animal, the division and subdivision into specialized centers, the inability to frame any scheme that will construct such a synthesis out of them as will account for the unity of consciousness only adds force to the suggestion that the unit of consciousness is the unifying and synthesizing force as a cause of organization.

The abandonment by biologists of the idea of a vital force does not necessarily include an abridgment of belief in a vital unit, and if it did, it would not be the first time in the history of Science when it has abandoned a truth to again return to it as clad in different garments and called by a different name.

I again suggest that consciousness demands two or more, and cannot reside in the one nor in any number of units, but is the quality of a force always found in the unit of unification and that is the individual; it is always above, beyond, and something organic rather than the sum total. It is never born and consequently can never die, and

as units and unity are conceived of as always associated, it is indestructible.

It would seem apparent that if consciousness was the result of the synthetic activities of the sentient cells, that where any disturbance of their automatic action occurs, as in the case of injury, there should be an abbreviation of consciousness during the interference, but this is not so. There is rather an increase of intensity of it, a distinctive specialization which we call pain up to the point of comparatively complete focusing of it, where, as I have before suggested, syncope and unconsciousness supervene. Here, I should say that the word unconsciousness is really a misnomer, for it is in reality the cessation of generalization on the part of consciousness. We have various names for such centralization of consciousness in the ordinary affairs of life; we call it concentration, absorption of mind, and absent-mindedness, and any such intensity of consciousness in one direction really results in comparative unconsciousness. This may seem paradoxical, but it is clearly true. When one concentrates his attention upon a single object for the purpose of the attainment of the new, if it be only to study the microscopical cell, he is oblivious to his surroundings; he is unconscious relatively to them just to the degree that he is conscious of the object which he is examining. This is elemental, of course, and within the experience of everybody, but it often happens that the commonplace is very suggestive and frequently offers the basis of solution for problems which have long puzzled the world.

Such a concentration of consciousness as I have just referred to is, of course, pleasurable, but if we reverse the conditions and conceive of such concentration as directed to the theretofore automatic centers we have but consciousness again shading into unconsciousness in the same manner, and up to a point where generalization ceases we call it "pain."

Consciousness of environment in the unifying, organizing unit is dependent upon the sentience of interacting, automatic organs, and its comparative specialization in utilization of the organism is pleasure, while the same specialization upon the reorganizing of automatic centers is pain.

The consciousness aroused by the stimuli of new sensations up to the point of disturbance of automatic centers is pleasure; the consciousness imputed to the individual by aroused consciousness in automatic centers is pain.

It would not be out of place to ask, if when we speak of consciousness of the individual, we have in mind the idea that he is supposed to be conscious of everything, that nothing may be supposed to take place around him or within his environment of which he has no knowledge? If we accept the definition given by Professor Haeckel, that it is best conceived as "internal perception," then the measure of consciousness is not what it perceives but its capacity for perception.

The vast number of occurrences in the environment of an individual are not, by any means, all counted in the area of consciousness, but while producing their physical effects are salted down,

if I may be permitted to use such an apt illustration, to be possibly at some future time freshened in the area of consciousness. For instance, the events occurring immediately about me as I walk the streets of a large crowded city appear to have made no intimate acquaintance with my consciousness, yet if some demand, say growing out of a necessity for my testimony in a lawsuit, is made upon me, I find myself able to lift into conscious memory the details of events which otherwise would have remained buried in the abyss of my central system.

Now my consciousness does not in such a case depend upon conscious impressions made at the time of the occurrence, but rather upon its own capacity to recover from the environment within (the preserved experiences, the epitomized events which make up the chain of my life, the living environment), a necessary and valuable incident, and build it into the selected life of self. In other words, I mean to accept without cavil the truth of the statement (p. 184, "The Riddle of the Universe") that "the momentous announcement of modern physiology that the cerebrum is the organ of consciousness and mental action in men and the higher mammals, is illustrated and confirmed by the pathological study of its diseases."

Thus, there is a great difference between declaring the cerebrum to be the cause of consciousness and asserting that it is, on the contrary, the organ of consciousness. Consciousness is not the contents which it holds, but the holder itself, and therefore, in discussing what we are conscious of,

we are not discoursing upon consciousness itself, but the objects of consciousness. This is precisely the distinction which exists between subject and object and the one which Du Bois Reymond and others have found to involve a problem which is insoluble.

George John Romanes, in his essay "Origin of Human Faculty," as presented in the volume of essays edited by Professor Morgan, says: "For it is the faculty of self-consciousness which thus enables a mind to set one idea before another as an object of its own thought; by means of this faculty the mind is able, as it were, *to stand outside of itself*" (italics mine) "and so to perceive objectively the ideas which are passing subjectively, and this just as independently as if it were regarding an external series of dissolving views. How is it that such a state of matters is possible whereby a mind can thus, as it were, get *outside of its own existence*" (italics mine) "and so regard its own ideas as objective to itself? This is the mystery of all mysteries, the *bottomless* abyss of personality" (italics mine).

Professor Haeckel freely admits that the physiological theory of the nature and origin of consciousness is by no means generally adopted, so that the question whether the individual is immortal would rather, so far as consciousness is concerned, resolve itself into a query whether the contents of individual consciousness are dependent for continuity upon the organs which mediated them and which will ultimately disappear.

Inasmuch as we know nothing about the nature

of consciousness in its last analysis, and apparently cannot, it is evident that while a scientist undoubtedly has the right to his own opinion as to its continuity after death of the organs, he should hesitate to declare any other opinion impossible in the light of modern science.

We know little about the qualities of consciousness, whether it is rhythmic in its character or not, whether it rests or not, whether it shines with diffusive light which reaches everything at once or rather focuses its rays in successive directions.

Here I am speaking of consciousness itself, not of its activity through its organs in the cerebrum; there we find that it is rhythmic, that it does rest, that it focuses its perceptive rays of light; it is in an environment of objects, and therefore demands successive objects to perceive. It is not omniscient and general; certainly not when operating in these organs, but limited, special.

That it should therefore find difficulty in perceiving objects in its environment by reason of breaks in the connection with it, such as injury to the cerebrum, is not strange, nor is it a conclusive evidence that it itself is caused by the organs so injured. I am not conscious of being in my office when I am at home, yet my consciousness has not died; my consciousness of that particular office is inactive, I admit.

This is elementary, but has no less force for that reason.

The fallacious argument from cerebral injury, stimulation of the organs, multiplicity of apparent personalities, appears to me to merely amount

to this: consciousness does not know everything, and it is not omniscient, does not perceive objects which it does not perceive; therefore, it is the effect of its own incompetent organs as the cause of its existence.

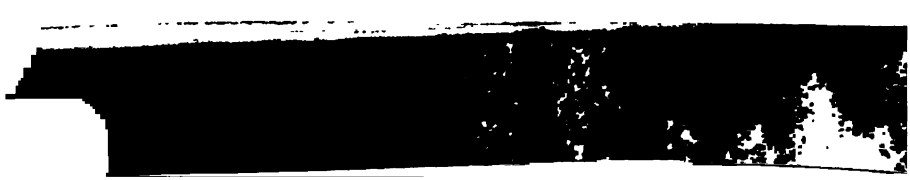
This mysterious consciousness again seems to have the power to select for its own perception and to choose from the physical centers such as it desires to lift into its own area, nor will the mere physical explanation of association of ideas completely satisfy the call for a cause. Such an explanation as the physical association of received impressions is founded upon the idea of the establishment of paths of least resistance, established as perceived impressions and associations of them, and presumably such a physical phenomenon occurs simultaneously with the psychological one of recalling an experience forming a unit in the chain of associated events which have made their previous impression, however slight, upon the organs of consciousness. What, however, are we to do with the events that have not at the time of their occurrence made any impression upon the organs of consciousness, when we find them coming up out of the depths of unconsciousness to consciousness? The conclusion readily reached, of course, is that they made their impression upon the subconsciousness, and, from the view which I take tentatively, of the one and the many both physically and psychically, I am prepared to admit that these stimulations did produce effects in subconsciousness. That is not the difficulty which at present confronts us, but that other which calls for some

physical explanation of how and why consciousness afterwards deliberately selects these particular sensations and perceives them.

As an illustration of what I think to be a common experience enough to be practically beyond denial, I refer to the phenomena witnessed in hypnotic experiments. I have seen a person hypnotized and such liberties taken with his person and apparel as would have been indignantly resented in the normal condition, injuries inflicted which would have caused instant and excruciating pain, but which were submitted to without a word of protest or a sign of objection. Just prior to arousing him the operator informed him that upon awakening he would remember all that had taken place; needless to say, he did. He, for the first time, berated the operator for permitting such acts and taking such liberties with him, and declared that he had suffered pain.

I am aware that we have been inundated with accounts of such performances until they are commonplace and tiresome, but that does not remove the fact out of the way, that such a subject brings up at suggestion a "familiar spirit" from the region of subconsciousness and introduces him to consciousness. The point upon which I wish to lay stress is that the "organs" of consciousness at command of the will select out of unconnected impressions one which it wants, and find in it an object of present consciousness with the element of pastness in it.

I have linked together pain and consciousness in this chapter, not because the suggested theory



proves anything, but because it has appeared to me to present more clearly and to my mind most forcibly the insolubility of the problem of consciousness. It is our experience that the automatic is always the result of the conscious, and as I have before stated, Professor Cope considers all adaptive movements as effort, and effort as attended with consciousness, the consciousness merging into automatism when effort ceases. If this is so, my consciousness is an effort of energy toward adaptation and is not now and cannot have been automatic, but considering that the movements of unicells are "impulsive and automatic" (Haeckel), the question arises, how did consciousness arise out of any combination of such cells with nothing but automatism as a precedent cause?

Of course if we follow Haeckel far enough to coincide with his "conviction that even the atom is not without a rudimentary form of sensation and will" (p. 225, "The Riddle of the Universe"), then we are at liberty to conceive of units of force in substance which are as true to the law of their being as are atoms, unless we admit what he calls the extreme probability that "they (the atoms) are not *absolute* species of ponderable matter—that is, not eternally unchangeable particles"; only in that case I must ask what brought these differentiated atoms into existence? Professor Haeckel's reply undoubtedly is found in these words: "We adhere firmly to the pure, unequivocal monism of Spinoza; matter or infinitely extended substance, and spirit (or energy), or sensi-

tive and thinking substance, are the two fundamental attributes or principal properties of the all-embracing divine essence of the world, the universal substance" (p. 21, "The Riddle of the Universe").

Does this in the last analysis explain differentiation? I find myself here just where I do at the close of another chapter in this book, unable to understand how infinite substance and infinite spirit (energy) can produce variety and individuality. It strikes me that without another and additional force, *aliunde,* we should have eternally an immovable sea of substance. The very moment that we conceive it as condensing, or breaking up, or differentiating, we have imported a foreign force, one unknown to science and not recognized by Monistic philosophy.

If Monism demands, as is claimed by some, that all manifestation should come from one thing, then the assumption of One Infinite Eternal Substance and "Spirit," or force, does not and cannot account for the differentiation in the Universe on such a monistic theory. We do not know what force is, neither have we any real knowledge of the nature of "Spirit"; they are words, and words only, used by Professor Haeckel, as by all, to occupy a relation to the problem similar to the X in algebra. Movement is summarily disposed of by Haeckel by calling it an "innate property" of substance. These again are only words; what is an innate property? It is something, and if Monism demands that all things shall come from one thing, then such a state of substance does not consti-

tute it, but is clearly a dualism, or I should rather suggest, a trinity. We have infinite eternal extended substance, which, according to the definition, cannot exist without force or spirit, and then we have the "innate property" of substance or "movement."

If we are to rely upon mere words, it seems to me that it will require but a substitution of names for these words and we shall have all the requisites of even the orthodox trinity, Father (substance), Holy Ghost (spirit or force), and Son (innate property of movement). I do not, of course, say that this is the Trinity, but that it could be, and further, that such an hypothesis as Haeckel presents is no more Monism than is such a conception of the Trinity. It has always been claimed that "In Him we live [Force] and move [innate property of movement] and have our being [substance]," so that even trinitarianism is Monism.

It is not at all necessary in order to escape dualism (if it be essential that we escape it) that we postulate the inconsistent hypothesis of undifferentiated eternal substance, undifferentiated eternal force, and innate property of movement, for by assuming "innate property of movement" as eternally in manifestation, we have either differentiated substance or force, and I can see no reason why we should be compelled to encumber ourselves with the conception of "innate property of movement," when we may as reasonably conceive of eternal units of "force" or "spirit" as a differentiation amply sufficient to account for all

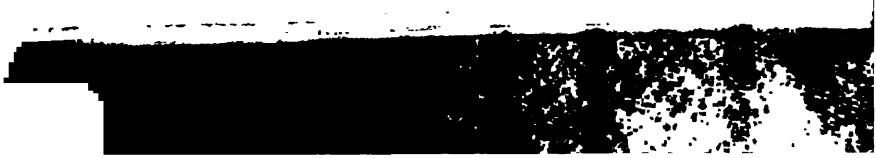
the phenomena of the Universe. "Movement" would follow such a differentiation of force, but with undifferentiated substance and force it might be innate in some transcendental manner, but would hardly manifest itself.

Perhaps I am wrong, but my reading of Spinoza has not resulted in the same construction of his meaning as that given by Professor Haeckel. The "thinking substance" of Haeckel which can think by being organized is, it seems to me, vastly different from the "thinking thing" which Spinoza says God is. Spinoza's "thinking thing" thinks. Its modes of thought are the individualizations which fill the universe.

Haeckel's "thinking substance" is like the "mind stuff" of Professor Clifford, a substance which does not think as a whole, but breaks up or rather condenses and by reason of such condensation bestows upon variety a faculty of thinking. I have presented a few of Spinoza's propositions in the chapter on The Witnesses.

That the modes of thinking are in eternal, incessant process of change there is no doubt; that nothing remains as it is is equally free from doubt; that the panorama of the universe is change, I freely admit, but may it not be that the *act of changing itself constitutes consciousness?*

A fair summing up of this suggestion would be this: change implies effort, effort is consciousness. We should then look for consciousness, not in the operation of complexities, that is, in the "chemical activities" of the cerebrum, but in the act of the building of the complexities themselves. The very



fact that, when accomplished and the complexity established, consciousness subsides into automatism is a strong indication that consciousness is associated with effort and may be, therefore, said to be the sense of effort. Death of the body is the result of consciousness, and, therefore, death is necessary to life.

Again I may conclude that as consciousness is not the complexity, but the changing attitude of that selective synthesis whose activity produces it, and as, therefore, that which possesses it cannot be born or come into existence, but ever is, we have no reason to say that because its complexity of environment has ceased as such, that it likewise has done so.

This activity, this unit of force, is the individual, and because he walks past the windows of our eyes in the very apparent complexity of body, and recedes into the complexity of the cell under the microscope, shall we, in the light of our unbounded ignorance of the nature of ether and its capabilities, say that the consciousness which was is not? The very cells in which its last activity presented itself, the cerebral cells, have finally become automatic, and the old man finds his brain a machine which grinds out that, and that only, which consciousness brought there by effort. He is senile; his brain produces the past; it is not the field of effort; what is? With no longer a use for the now automatic machine, what scientific reason is there to say that the individual is not as before making effort? The field of his consciousness has been all the time pushing up with the

least stable and least fixed portion of his living environment, and as we shade ponderable matter off into ether, let us not yet hesitate to conjecture that the organic efforts of the individual during what we call life have shaded off likewise into a field of acquisition, of complexities of which we know nothing.

Evolution carries too many potentialities, selectivities, memories, tendencies, inherent capacities, and adaptations, and biology too many ids and idants, chromosomes, centrosomes, plasms, and mysterious powerful invisibilities to induce a rational man to haul down his flag of immortality just because some sciences do not go any further than they can.

Chapter VII

MEMORY

If there is any one attribute of mind which is the foundation of all the others it is memory, for without it there is and can be no consciousness, and its absence would render the wonderful germ cell from which each individual body came as impotent to evolve the physical structure which comes from it as is the amœba.

For these reasons some consideration of the nature and phenomena of memory is of importance.

That there can be no consciousness without memory is, I think, clearly apparent when we realize that it is only by the contrast of the succeeding moment's sensations with those preceding it that we have any conceivable basis for comparison or appreciation of differences, and this is true whether we are engaged in processes of thought or receiving impressions through the senses from without. Consciousness has been frequently called a stream, but it must be a stream in which the departing wave does not recede from sight until the incoming raises its crest to the eyes. It is the change and the knowledge of the change and its character which constitutes consciousness and that necessitates memory.

That there may be memory without consciousness will as clearly make itself apparent when we consider the automatic processes of the various organs of the human system. So long have they performed their functions that the work is done, as far as we are concerned, unconsciously.

Memory may then be said to be the vehicle of consciousness, and we may be certain that wherever we find consciousness there will memory be likewise, and that just in the proportion that memory is deficient will consciousness be dim and uncertain, but it does not necessarily follow that where consciousness is not present memory is absent.

What, then, is memory? If we are to confine ourselves to the physical phenomena, as I have already said in a previous chapter, it is possible to conceive of an actual preservation of distinctive forms of motion caused by the sensations produced by objects whether we resort to the individual cerebral cells or to combinations of such cells. Such a possibility I find to be admitted by Professor Bain. He estimates the number of cells in the gray covering of the hemispheres of the brain to amount to 1,200,000,000, and "hence there is no improbability in supposing an independent nervous track for each separate acquisition." Of course, this would only amount to the establishment of an inner environment constructed of forms of motion, probably correspondences of the objects causing the sensations or stimulations.

Incoming impulses or those aroused by introspection may cause discharges of energy along

tracks and among cells holding an associative relationship to them and bring before the mind recollections. But, as I have suggested before, there is no physical explanation for the sense of pastness, nor, indeed, I may add, for the sense of forgetfulness so often felt by us.

Not infrequently we hunt for an idea, one which we feel to be an old friend; we can almost catch it, but it eludes us, and it is only after persistent effort that we succeed in making it stand and deliver.

Now, in such an instance it is apparent that somehow we travel in avenues close by the elusive idea; we can almost see it "around the corner," but I candidly confess myself as yet unable to find a physical cause for our knowledge of its absence. Physical and psychical phenomena are coöperative, and yet there are occasions when one or the other appears to precede the coördinate phenomena as the immediate cause of the operation of both. Possibly there may be an unknown and unmeasured physical attendant upon psychical phenomena.

Returning to the sense of forgetfulness, we shall find, I believe, that the operation of the law of association of ideas fails to be an adequate explanation. The existence of the elusive idea is suggested, of course, by other thoughts with which our attention is engaged and ought to respond at once, if the associated ideas are aroused to the field of active memory by relationship physically.

Conceding that for some reason there is a physical blocking of the nerve track, and the cell or

cell center in which the lost idea is closeted cannot be aroused, yet the mind knows that it is blocked, knows that it has the idea, has an indistinct conception of what it is, realizes the necessity of recalling it, and willfully goes about the work of finding it. This would appear to be a "sum total," which as a product realizes that it is not the product which it ought to be, and that if it could only add another force as a unit it would be a different "sum total."

Possibly a satisfactory explanation of this can be given, but it remains, so far as I am concerned, one of the mysteries of memory, one of the things which Science does not know, but at which it may make more or less rational guesses.

There is another rather curious habit which memory seems to have, and one which again leaves a mystery unsolved if, as Professor Haeckel says, the soul is the "sum total" of the chemical activities of the cells of the cerebrum, and that an individual cannot be divided and retain its individuality.

I have found frequently, as I presume everybody else has, that when a name or a number, or even a quotation, has escaped my memory, I can recall it by directing the attention mechanically or automatically to something else temporarily, as, for instance, by adding a column of figures or engaging in light conversation. When I do this, usually the lost name comes up from the depths like a submerged cork which has been suddenly loosened from anchorage below. Now, in the common experience the "sum total" is either en-

gaged in the exercise or the conversation referred to, or the "sum total" is not one, but is divided, and one of them is engaged as suggested, while the other is searching the nerve tracks and cerebral cells for the lost name. Either the individual is not a "sum total," but the master of various units and combinations which simultaneously do the bidding of the will, or there is no individual, he being divided into two separate "cerebral activities," even though one of them is unconscious or subconscious. Lest it be supposed that I do not fairly quote the definition of a soul and individual as given by Professor Haeckel, I will here say that I understand fully that his definition of a soul is that it is "a collective title for the sum total of the cerebral functions." But as a sum total is a definite factor and the adjective "collective" appears to be superfluous, I feel justified in considering his definition to mean that there is no true unity of mind function, but merely a changing, vacillating multiplicity of functioning cells which seem in some unaccountable, transcendental way to make up a "sum total" akin to the N function in mathematics.

As one purpose of this chapter is to endeavor to present some features of the action of memory which remain unsolved mysteries, and which seem to demand something more as a cause than the cerebral cells which appear to be the organs of its functioning, I will again refer to the memory of the germ cell. To account for the organized human body which arises from its activities without admitting the truth of the ancient doctrine

of preformation, biologists, including Professor Haeckel, ascribe to the fertilized ovum cell certain wonderful unconscious memories; memories which result in presentations of evolving forms from the cell through the line of species from which man has finally emerged to the full stature of humanity.

This, of course, necessitates a memory somewhere and somehow in the one cell, of the various changes through which it must thereafter evolve. Consider what this demands of us in the way of mental gymnastics. First, the physical memory must have its physical counterpart, and every existent potential memory must be stored as a form of motion of matter in that one cell if we adhere to the theory that memory is always attended with cerebral or cell or material activity. We have seen that we can conceive of a depository for all the elements of memory up to a certain point if we provide cells or cell centers enough to contain them in some forms of motion or chemical activities, and that we have even some comprehension of how these become consciously active and form a basis for intelligence.

In the case of the germ cell, however, it divides, first into two cells, presumably each like the other; certainly we know of no chemical process by which the memory of these two has become in any way changed, unless something has been added to them, hence they are so far the same; they then divide into four, again alike, and so on until we reach a certain point in the process of division where a series of lower animal embryonic forms

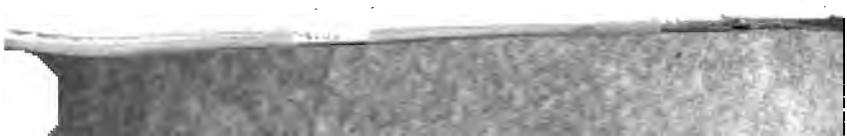
appear one after another, evolving out of each other in a determinate order. If we are to concede that a memory must always be associated with, as its necessary correlative, a physical organism, then that physical organism must be equal in complexity and coördination to the complexity and coördination of the memory. It is useless in such a position to talk of potential memory, for even the atoms which are hypothetically gifted with "will and feeling" can evolve no memory which will be capacious and complex without, by association with other atoms, building a complex brain substance capable of functioning such a memory, in which case the memory is not conceded by Haeckel's theory to be the result of the potential memory of a single atom, but the "sum total of the cerebral activities."

Long before the embryo of the coming animal appears, the cells which have by division been born of the original one cell begin to divide the work among themselves; in other words, to differentiate as to function. Is this the memory of these cells? No, for they have never performed the process nor witnessed the process of the performance before; they are new cells. Is it the memory of the original cell? No, for it has disappeared in the many. It is the memory at best, under that theory, of the morphological unity. We can conceive of separate cells receiving impressions and setting up forms of specific motion and in a unity producing a synthetic result, but here we are confronted with the opposite proposition—of one cell producing many with separate func-

tions which, by a mutual activity, construct a synthetic product. If memory is, physically considered, a form of motion, is it within the bounds of human knowledge, or even within the limits of human understanding, to comprehend how there can be in the one original cell a unification of a multiplicity of memories which may be transmitted to many cells as differentiated, varying memories?

Memory is here a word to which Science flees for refuge; it is one of the explanations of the activities of the cell given in order that effects may be matched with sufficient causes. I believe, notwithstanding its wide acceptance as a theory, that it is utterly beyond anybody's capacity to demonstrate its correctness. It serves its purpose and yet remains only a hypothesis.

That such a form of motion in the germ cell is not quantitative but is qualitative, if it exists at all as the correlative of the "unconscious memory," is made fairly clear, as I have shown in the previous part of this book, by the experiments of Pfluger with clamped ovum cells of the frog, which experiments together with those which I have mentioned as made by Professor Loeb with the eggs of the sea urchin, seem to indicate that the substance of the egg is undifferentiated as to its power of producing the embryo. Every part has, then, the same "unconscious memory" and its form of motion, not a synthetic one of the mass but evidently molecular. Such a conclusion renders the mystery of the memory of the cell more dense, because it requires that these wonderful



memories shall be looked for in infinitely smaller bodies than the cell itself. Scientists have recognized the profound mystery attending the activities of the cell and the difficulty of providing the machinery essential to do such marvelous work. That is the reason why Weismann proposed the theory of his ids, idants, and biopheres, and why there is such earnestness in the field of cytology just at this time. Science has given its various theories based upon the data which it has in its possession, and that is right; but it is far from being conclusive, and it always has an unknown region beyond its last footstep.

Recalling the theory of the possibility of even an etheric body suggested in the chapter on "Some Things Which Science Does Not Know," a theory, of course, presented as merely a tentative one, we shall see that while memory is essential to consciousness of objects, yet consciousness after all constitutes but a very small part of our lives. Between the outer environment and the inner one which we have conserved, and which constitutes the deep from which the forms of memory are brought up, is the very small circumscribed position which we occupy in our waking consciousness. I say waking to distinguish it from the consciousness with which we are familiar in dreams.

Of the vast number of impressions which we have received and which are conserved within us, we are from moment to moment conscious of only a remarkably small number. We *can* remember, but habitually we do not, and when we do it is only a comparatively insignificant number at a

time. Of all these experiences which we have had, of all the faces seen, of the great and overwhelming number of events which have crowded upon us during life, of all the conversations, books which we have read, of that great unnumbered multitude, how many are at the present moment present to consciousness?

This moment's consciousness is comparatively an insignificant thing to contemplate, and yet it is in the now that we live, and consciousness is seemingly its value, but is it? As I read the pages of a book, my eye sweeps rapidly along the lines taking note of every word, of necessity of every letter, and if I make the seeing of every letter an act of consciousness, it is a painful operation. It is the thought embodied on that page that I am after, not the road to it, hence those former halting efforts at spelling, which in boyhood I made, have resulted in an approximately automatic servitude on the part of my eyes, centers of letter memory, word memory, sentence memory, and indeed of nearly the whole cerebrum. I am conscious only of the thought in its successive changes in presentation. The real self—the center of consciousness—the soul is that very unifying force which once in consciousness laid the foundations of all those new unconscious automatic processes of memory and which is the One using the many in acquisition of the new.

Again, an analysis of the experience of the mind in extemporaneous speaking reveals a process of the creation of new compilations of thought in a definite direction, in which memory without

consciousness opens its many doors and pours forth its treasures, figures, words and ideas which are simultaneously organized into new structures, and symmetrically builded into a continuous chain of reasoning and possibly a pyrotechnic display of the imagination. Here apparently consciousness dwindles to an imperceptible point, but in fact it is itself a never-changing unit perceiver of an incessantly varying organization of burning feeling.

In both cases, we have the comparative automatic action of memory serving the dominant will, the something which unifies and which while the unifications vary immensely in their intricate combinations from second to second, yet feels and knows itself to be the same unity unchanged in self-consciousness and perfectly well aware that it was by its determination that those wonderful kaleidoscopic changes occurred.

The so-called subconsciousness therefore of our environment and the memory of all our experiences seem to me to be but in themselves environments, activities which but serve to conserve their product in turn for a larger and more comprehensive consciousness and memory.

It would be a mere matter of opinion on my part to say that I believed the individual to be something somewhat larger and more inclusive than the memory and consciousness which are evidently not the ultimate conserved memory or the true and full consciousness.

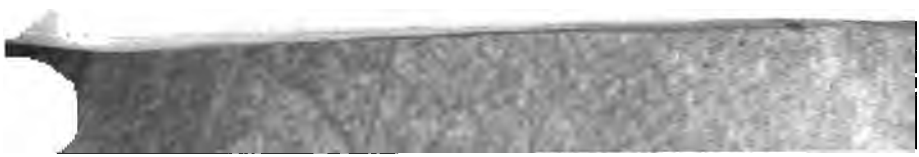
It is not necessary that we imagine a separate body for the soul, or indeed a separate body at

all, if we find ourselves able to conceive of the continuity of etheric substance into ponderable matter. Body then is perceived to be cells, many and small, cells are viewed as structures of molecules, molecules as atomic combinations, atoms as forms of motion, vortices in ether, and at no place is left a break in the continuity in any form of ponderable matter back to the substance itself. If such be the fact, and there are many reasons to think so, and many scientists who believe so, then we shall not look for the individual in the mere functioning of his contact with ponderable matter, but trace his life back completely to an organic force in ether.

If the individual then extends, as he would if ether is continuous, into the ether, there is no reason made apparent by Science why the chemical activities of the evolving body do not start there, nor why the chemical activities of the organs of memory and consciousness may not report there, nor why there may not be the true conservation of memory and the real consciousness. Complexity and organization may well be a condition antecedent as well as a result, as each would be but an activity conditioned by its environment.

The natural and pertinent questions here are whether memory can be conceived as continuing upon the loss of the ponderable body, also why we do not have memory of any past beyond the body.

Attempting to give a conceivably truthful reply to the last question, first in order; I suggest



that even the science of biology concedes that in a very large sense we do have memory of past existence for as we have seen it has been compelled to conserve those memories in the germ cell in order to account for heredity and provide a substitute for preformation. A little consideration of the law of specialization and generalization will lead us to conclude that it is possible that in the fertilized ovum cell the individual finds that very point of commencing evolution essential to its presentation as ponderable matter or "condensing ether." It is possible that heredity is of the cell alone, and the memories additional which present their products in the forming embryo, those of the individual. There are mysterious changes enough to be perceived in the cell as it begins its work of division and synthesis to demand just such an organic activity to be present.

Does this suggest too forcibly a *deus ex machina*, an entering spirit? Not one bit more so than does the theory of biology. When the germ cell begins to become many and divide and redivide, from whence comes the material of which the products are composed? From outside of course, nobody denies that external environment is absolutely essential to enable a germ cell to become an animal; its substance is added to by growth, and growth demands molecules and atoms, and molecules and atoms are the presentations of "condensed ether," and we have conceived the individual to be existence in the ether as a unity of force. Now it is immaterial whether we call this chemical affinity or the activity of an able

unity, we know that the results are life, changing life, form, changing form, and such a conception comes nearer to accounting for the epitomized evolutionary proceeding from cell to embryo than does the theory of unconscious memories which come into activity by platoons only when one has ceased to be the one and has become the many.

This is a vastly different proposition than that of the creation of a special soul which enters the body. It is not dualistic, it is rather polyistic and certainly as Monistic as Haeckel's "Collective title for the sum total of cerebral activities." It is the column of units and the process of addition, rather than the "sum total."

Now as to the second question which is, as to whether memory can be conceived as continuing upon the loss of the ponderable body. It has been said that the etheric body is impossible because it is not consonant with the "laws of substance." That may be so, but when were the "laws of substance" discovered, and by whom? Substance itself, our reason demands, but it is only hypothetical, its laws only guessed at. I say guessed at because the practice of Science, and a very proper and necessary one, is to formulate a theory based upon data and then push into the unknown and relate everything in the way of phenomena to that theory. The theory may be wrong, it frequently is so; there may be many different theories, there often are; and hence the "laws of substance" are laws only to those who accept that particular theory to which they apply them. So-called "laws" have more than once been repealed

by enactment of the college of physicists. I fancy Haeckel's conception of gravitation is somewhat different from that of Newton, and possibly in a short time the "laws of substance" may be differently formultaed and convey a vastly different idea than does Haeckel's as presented in "The Riddle of the Universe."

But, considering that the ponderable matter of the composite body only represents a specialized phase of the life of the individual, and that we do not rightfully mark his boundaries when we walk around him in the flesh, we may well conceive that the very continuity of etheric substance affords us a sufficient basis for a belief that the actual memory is no more finally located in its organs, the cerebral cells, than the final activity of the whirlwind is to be looked for in the atoms of dust which spin in it, and take form from it, or is to be located even in the air in which they float.

Naturally, as we contemplate the body of a man five or six feet in height and with a rotundity proportionate, we incline to imagine that any structure in ether or any substance which shall be commensurate with the substantial memories of the individual must be comparatively large and proportionately capacious.

But when we recall the fact that even the wonderful memories of the germ cell must be looked for in bodies much smaller than the cell itself, indeed in such as are beyond our microscopic view, we should not make size a stumbling block to the conception of a unit of force, an individual center capable of the conservation of memory. We can-

not place a limit to the series of vanishing elements in the cell (Wilson, in the International Monthly, July 1910); and the capacity of any portion to reproduce in presentation these memories, if the cell be artificially divided, is evidence that the forms of motion as I have said before, are not of the mass but of much smaller bodies not yet identified by Science.

Possibly we shall yet reach the atom as the individual laden with memories. The atom, whatever it is, is a profound mystery, it has been supposed to consist of a hard, round body; to be a differentiation of hydrogen; a vortex ring or a vortex of some other character; possibly an electron, etc. It has assumed so many protean shapes in the scientific imagination that probably it is individual and variable as to size, capacity and potential characteristics.

Therefore, if memories many are to be found at the commencement of the physical man in bodies so small as to be beyond our possible vision, I see no reason for conceiving of memories as confined and limited in fact to the cells of the cerebrum, but on the contrary as reaching back and back to similar elements of which these cells like the germ cell, are composed. Neither do I see any known reason why they may not, as I have suggested, finally even be landed in one.

Again it may be, and it is conceivable that, the activity in the etheric substance may in turn rhythmically subside to unconscious memory in the lapse of time, and there may be a form of energy in the ether comparable to that wonderful

burdened germ cell, in which shall be preserved the potentiality of that larger memory, the essence of individuality, that which after all needs not to carry the petty details of time's experience any more than we now find it essential to do so in order to preserve our individuality.

Knowledge may be a word which covers them more than consciousness and memory. And this rhythmic movement may proceed from eternity to eternity and waking and sleeping, consciousness and unconsciousness, memory and forgetfulness follow in order just as they do now with us in the flesh. Who knows? Do I? No, neither do those who measure the individual by his organs.

Chapter VIII

MONISM

In reading "The Riddle of the Universe," we find reference made frequently to "pure monism," and naturally the inference drawn from the use of those words is that Monism as a thesis is susceptible to adulteration, and that in some manner not easily discovered in Prof. Haeckel's work he has presented it in its unadulterated, pristine purity. Whether this is so or not depends entirely upon what we understand as Monism. It is not at all an unusual occurence for an advocate of a particular theory to insist that his presentation of it is the only one which should be recognized, indeed such an arrogation constitutes the strength of the individuality of the especial thesis for which it is claimed. Each sect of Christendom broadly asserts its creed to be the formulated expression of pure Christianity, if it did not it would have no reason for existence as a separate body.

Undoubtedly the Monism presented by Prof. Haeckel is to him "pure monism," but others who lay claim rightly to the title of "monists" may with equal propriety assert their system to be "pure." They may consider that Haeckel, because of the "organization of the individual," the "momentary condition of his environment" and

thing, less "pure" as Monists. Monism is not a quart pot in which to measure the universe, it is a theory, and a strong one indeed, under the ægis of which one may build many speculative universes. There is nothing so all-commanding, all-demanding, so overwhelmingly rejective about it, that a man, having come to the conclusion that what he has mistaken for dual is in fact single, should perforce of his adherence to that thesis never be able to find any truth which does not wear the label of Monism. It is not nearly so important that we be loyal to the Monistic theory as that we find truth.

In this connection I cannot refrain from again calling attention to the emphatic statement of Prof. Haeckel that he is at one with George John Romanes except in unimportant particulars, because it will enable me to make clear the fact that Monists, and among them Haeckel and Romanes, differ widely upon very important particulars. At the risk of being criticised for repetition, I will recall to your minds the assertion of Schopenhauer quoted approvingly by Haeckel that the Monistic philosophy to which he adheres as "pure monism" has given the "Lord God his *congé*." He undoubtedly has the right to form such an opinion, and my purpose is not to enter into a dispute religious as to the existence of an Infinite Being, but merely to show that as with Spinoza, he materially differed on this question, so with his co-Monist, Romanes, he has nothing in common on this point.

It is certainly a vitally important difference

as I shall try to demonstrate. Nobody wi
that there is a broad distinction betv
"thinking substance" which, as such as a
is mindless, but endowed with innate pro
of movement, etc., which evolve in the
will and sensitiveness, and ultimately
and soul in the complexities of the cerebr
—and, a "thinking substance" which thi
much.

One is Haeckel's, the other Spinoza
George John Romanes'. I have quoted a
from Spinoza on the point in a preceding c
but I wish here to remark upon the wide g
tween Haeckel and Romanes.

In "Mind, Motion and Monism," Romane
ferring to the views of Prof. Clifford, whicl
suggest are similar on this subject to tl
Haeckel, says: "Assuming the theory of M
I desire to ascertain the result to which
lead when applied to the question whet
ought to regard the external world as of
acter mental or non-mental. As observed
Rede lecture, this question has already be
sidered by the late Prof. Clifford, who
on the Monistic theory the probability poin
wards the external world being of a charact
mental; that, *although the whole universe
posed of 'mind stuff,' the universe as a w
mindless.* This decision I then *briefly cri*
it is now my object to contemplate the
somewhat more in detail." His concluding
upon the matter are these: "As a ma
methodical reasoning, it appears to m

Monism alone can only lead to Agnosticism." (In a note, he says: "It may be explained that by Agnosticism I understand a theory of things which abstains from either affirming or denying the existence of God.") "That is to say, it leaves a clear field of choice as between Theism and Atheism; and therefore to a carefully reasoning Monist, there are three alternatives open. He may remain a Monist and nothing more; *in which case he is an Agnostic.* He may entertain what appears to him independent evidence in favor of Theism, and thus he may become a Theist; or he may entertain what appears to him independent evidence in favor of Atheism, and thus he becomes an Atheist."

A similar view seems to be taken by Spencer in his last edition of "First Principles," and possibly it may be suggested of that gigantic philosophic intellect, as it has concerning Virchow and others, that his views have been modified by approaching age. Of course, any close student of Spencer will at once resent any such suggestion, being well aware that the great generalizer never took any other position, but has merely, out of an abundance of caution, declared his views in rather plainer terms, and this is what he says: "But an account of the transformation of things . . . is simply an orderly presentation of facts; and the interpretation of the facts is nothing more than a statement of the ultimate uniformities as they present the laws to which they conform. Is the reader an Atheist? The exposition of these facts will neither yield support to his belief nor destroy

it. Is he a Pantheist? The phenomena and the inferences as now to be set forth will not force on him any incongruous implication. Does he think that God is immanent throughout all things, from concentrating nebulæ to the thoughts of poets? Then the theory to be put before him contains no disproof of that view. Does he believe in a Deity who has given unchanging laws to the universe? Then he will find nothing at variance with his belief in an exposition of those laws and an account of the results."

Mr. Spencer dissents from Haeckel and the school of Monists to which he belongs in that he claims that evolution does not require any abandonment of Theism.

In precisely the same arbitrary manner as Haeckel disposes of the soul of man by the declaration that it is "a collective title for the sum total" of the activities of the cerebral cells, he, Haeckel, gets rid of the idea of God, with the exception that he fails to be true to his own logic. In other words, he admits that the *"sum total" in man yields something akin to soul, but fails to find the same to be true as to the sum total of universal activities.*

Whatever we define the soul to be, it nevertheless remains true that it feels, thinks, acts, and is conscious, and this is evident even though we should admit that it is a "collective title," etc. Yet Haeckel scornfully denies the possibility that there may be a Being whose name is "a collective title for the sum total" of the activities of the universe, whose "modes of thought may be differ-

entiations attending the eternal modifications of substance." It is just here that Spinoza in his Pantheism differs widely from Haeckel. Haeckel finds a substantial agreement between Atheism and Pantheism, although it is fair to state that he limits his definition of God to a personal extra-mundane entity. His use, however, of these words which follow leaves no doubt as to his attitude on the question: "This 'Godless world system' substantially agrees with the Monism or Pantheism of the Modern scientist; it is only another expression for it, emphasizing its negative aspect, *the non-existence of any supernatural Deity*." No doubt, if his destructive attack had been confined to an "extra-mundane, supernatural deity," it would have found ample support in the light of true Monism, but it is clear that from his whole discussion of " God and the World," the "Moral Order," etc., that his Monistic idea is, beyond question, Atheistic and a denial of any mind or being "In whom we live and move and have our being." I repeat, Haeckel's thinking infinite substance does not *think*, as such.

The Pantheism of Spinoza, which Haeckel imagines finds a scientific reflection in the "Riddle of the Universe," was quite a different conception, or else Spinoza was guilty of disguised and covert arguments, and this he expressly denies in Letter XLIX to Isaac Orobio, as follows:

"Thus, you see, my friend, how far this man has strayed from the truth; nevertheless, I grant that he has inflicted the greatest injury not on me, but on himself, inasmuch as he has not been

ashamed to declare that, *'under disguised and covert arguments, I teach Atheism.'*"

Even Spinoza did not see absurdity in considering the Universe as one individual *physically*, for in Part II of the "Ethics," he says: "We thus see how a composite individual may be affected in many different ways, and preserve its nature notwithstanding. Thus, we have conceived an individual as composed of bodies only distinguished one from the other in respect to motion and rest, speed and slowness, that is, of bodies of the most simple character. If, however, we now conceive another individual composed of *several individuals* of diverse natures, we shall find that the number of ways in which it can be affected, without losing its nature, will be greatly multiplied. Each of its parts would consist of several bodies, and, therefore (by Lemma VI), each part would admit, without change of its nature, of quicker or slower motion, and would consequently be able to transmit its motions more quickly or more slowly to the remaining parts. If we further conceive a third kind of individuals composed of individuals of this second kind, we shall find that they may be affected in a still greater number of ways without changing their actuality. We may proceed thus to infinity, *and conceive the whole of nature as one individual*, whose parts, that is, all bodies, vary in infinite ways, without any change in the individual as a whole." We shall find room for the rational application of the law of relationship, and the theory of the living environment, inasmuch as his definition of an

individual is found in these words: "That which constitutes the actuality of an individual consists in a union of bodies; but this union, although there is a continual change of bodies, will be maintained; the individual, therefore, will retain its nature as before, both in respect of *substance and in respect of mode.*"

Neither did Romanes, in "Mind, Motion and Monism," consider it beneath his Monistic dignity to contemplate the possibility of such a conception being true, for we find him indulging in such language as this: "For aught that we can know to the contrary, not merely the highly specialized structure of the human brain, but even that of nervous matter in general may only be one of the thousand possible ways in which the material and dynamical conditions required for the apparition of self-consciousness can be secured. To imagine that the human brain of necessity exhausts these possibilities is in the last degree absurd. . . . It may well be that elsewhere (or apart from the conditions imposed by nervous tissue) subjectivity is possible, irrespective both of circumscription and of complexity. . . . Now, if we fix our attention merely on this matter of complexity, and refuse to be led astray by obviously false analogies of a more special kind, I think there can be no question that the macrocosm does furnish amply sufficient opportunity, as it were, for the presence of subjectivity, even if it be assumed that subjectivity can only be yielded by an order of complexity analogous to that of a nervous system. For, considering the material

and dynamical system of the universe as a whole, it is obvious that the complexity presented is greater than that of any of its parts. . . .

"If we imagine the visible sidereal system compressed within the limits of the human skull, so that all its movements which we now recognize as molar should become molecular, the complexity of such movement would probably be as great as that which takes place in a human brain. Yet to this must be added all the molecular movements which are now going on in the sidereal system, visible and invisible." He might well have added the statement that such a compressed sidereal system would of necessity also include all of these very human brains, with all their complexities.

Nobody admitted more frankly than Professor Romanes the impossibility of forming a comprehensive conception of a universal mind, not, however, because it did not and could not exist, but because of its very transcendency. He refused to admit the force of Professor Clifford's argument, negativing the existence of mind in any other form than that which we find in brain, and found no sufficient reason for ruling a Universal Being out of the Monistic system. He was an Agnostic; Spinoza, a Pantheist; Haeckel is an Atheist.

Thus, we find that Monism has really but one common theory upon which all Monists agree, and that is that mental and physical phenomena are but aspects of one and the same thing, neither being the cause of the other. It by no means follows that, because we, being possessed of brains, have associated with them the phenomena of

thought, there is no other association of thought and organized substance. All that Monism can demand as essential to consistency with its thesis is that we shall not designate either thought or matter as cause wherever the phenomena appear simultaneously and associated. If we are loyal to this fundamental rule of Monism, then the whole question of mental existence after the death of the composite body will depend upon the possibility, or otherwise, of any structural properties in matter or substance more attenuated than that of the cells of the cerebrum, and considering our profound ignorance at present on that subject, we are at liberty to exercise either our religious or scientific faith without being justly charged with an abandonment of the Monistic theory. It may well be that, instead of consciousness and thought fading into mere dessicated sentience with the shading of ponderable matter into invisible substance, we shall rather find that, with this process on the part of matter, mind becomes more and more emphasized and gifted with a much wider range of knowledge.

Rational scientists may take either view of that matter and await further evidences, if any be forthcoming, and it is precisely at this point that Haeckel, standing upon the fundamental rule of Monism with Spinoza and Romanes, finds reason to face West while they face East. Which way you and I shall look, will depend largely upon our experience, our data, our independence, and our desires.

Chapter IX

THE WILL

From whatever standpoint we begin the analysis of ourselves, we find one thing which appears to stand out as the present cause of all our activities, namely, the will.

We seem to be fully aware that it is by our volition we live, for conversely, somehow, we are unable to escape the conclusion that it would but require an effort on the part of will to cease from activity and stop living. We feel moving behind the shifting scenes of our daily lives all the time this shadow, desire or will.

Nothing appears able to restrain or control it save such interferences as come from the limitations of our physical environment, and even those, while they frequently build impossible barriers between will and physical activity, seem to seduce the desire into a wilderness of longings which transcend the possibilities of our bodily achievement.

It is the one thing which within ourselves acknowledges no king, no ruler and no limitations in its exercise as itself. It has an absolutely unqualified freedom as its inherent quality. Whatever the limitations and conditions may be which on the part of the external world serve to prevent

it from untrammelled activity objectively, they do not and cannot in the least prevent it from creating its own environment of subjectivity, from desiring that which it will, and from even out of these desires building its own subjective universe. The will and the imagination are the shoulders of the Atlas who holds the true life poised as the individual.

I have called attention in another place to the emphatic statement of Romanes in "Mind, Motion and Monism" that in his opinion, one for which he gives logical reasons, "The will itself is here the ultimate agent, and therefore an agent, which must be identified with the principle of causality."

Turning now to Haeckel, we find that in the first place he imbues the atoms with will and sensitiveness; will and sensitiveness, however, which is very slight, merely a suggestion of them, if I understand his position. From these atoms by the process of evolution comes the individual as a product, his will of necessity then a composite will, its action synthetic; if such a thing be possible, a sum of wills, which as a total produces the individual will. Such a will is, of course, not free, freedom is impossible, it must of necessity be absolutely the servant of its masters, the atomic wills.

Viewing the human body from a psychological standpoint, I confess myself unable to find any possibility of the establishment of any individual will in such a manner.

The physical system is one composed of innumerable cells, the brain itself, the seat of physical

activities, is a vast multitude of them. They in turn are made up of an uncountable number of molecules and atoms. The atoms as such are as definite and individual in structure in the central system as they ever were when out of it. They have been drawn into the dance of atoms and undoubtedly must have retained their wills, so that we have a composite of an enormous number of independent wills in the human body.

We are certainly conscious that a dominant individual will is the coördinating power behind the wills of particular ganglionic cells, and the commander of the multitude of wills in the living environment. We know it because we are able to move the output of these wills in a given direction, say of the attainment of some ideal. Ideals as such are always beyond our experience and we could have none if it were not for desire, one desire, one which will even sacrifice the contending wills for it. Indeed any conception of a condition of harmony sufficient to hold together the vast concourse of units of will in the human body, is impossible, without the assumption of an *individual* will, again the unity, the unifier, the unit of force. The very assertions of Haeckel that will is a "universal property of living psychoplasm" and that the atoms are gifted with will and feeling, demand that before we can reconcile the knowledge which we have of the physical and mental man, with them, that there should be one force, one will which holds them in union as one apparent body with one activity of units. It is this which is the will of which we are conscious.

I cannot refrain from referring to the fact that Professor Romanes is again at this point diametrically opposed to Professor Haeckel in that he emphatically declares the will to be free. Free as such, and only limited in its ability to act. Individual wills, he tells us, are not conditioned by the Universal or God will, but that the Universal Will acquiesces in their volitions, also that individual wills may influence other individual wills by reason of the fact that they are separate and apart from each other. He asserts unequivocally the absolute freedom of will. Now, this subject of the freedom of will is not an "unimportant matter," for Haeckel himself states that "the importance of the question is also seen in the fact that Kant put it in the same category with the questions of the immortality of the soul and belief in God."

Indeed it seems apparent that the philosophical and ethical conclusions reached by these two great Zoölogists scarcely touch at that point.

It seems to me that Haeckel confuses the desires with the activities of the will. While I may desire to fly, my physical limitations prevent me. I may *will* to spread my wings and nothing can prevent me from so willing, but I am not able to fly. I can certainly will to hail the man in the moon, but I shall never make my voice reach him. The will *qua* will, says Romanes, is free. It is just here that Haeckel, it appears to me, makes the mistake of considering the hindrances to action, to be hindrances to the will.

There is a strange and to me striking incon-

sistency in "The Riddle of the Universe" in that Professor Haeckel assures us that "Each act of the will is fatally determined by the organization of the individual and is dependent upon the momentary condition of his environment as every other psychic activity. The character of the inclination was determined long ago by heredity from parents and ancestors. The determination to each particular act is an instance of adaptation to the circumstances of the moment wherein the strongest motive prevails, according to the laws which govern the statics of motion."

Now I cannot understand why Professor Haeckel should take the pains to write a great many pages in which he strives to promote the Ethics and Religion of Monism. What is the use of telling us that the Golden Rule, as given by Aristotle: "We must act towards others as we wish others to act towards us," is in complete harmony with Monistic Ethics? Having, in the language which I quoted, negatived the freedom of will, we cannot help ourselves as to how we shall act toward others, nor can we control our desire as to how others should act toward us.

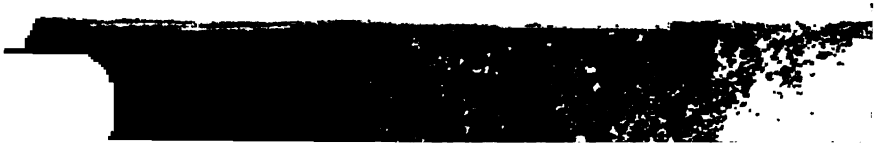
The Golden Rule must take care of itself, for we shall act just as our "inclinations" are determined by heredity, and we shall wish just as the "strongest motive" directs.

There can be no religion in such a view, for whether we feel "astonishment" when we gaze at the heavens or not, whether we shall feel "awe" when we trace the "marvellous workings of energy in the motion of matter," or not, will depend

absolutely upon whether we are, in our particular individual machines, producing these commodities of astonishment and awe. Furthermore, the very religion which he assails, the superstitions, the cruelties and wars which he decries, the revelations which he ridicules, are all as much entitled to their place among the determined actions and inclinations of human beings as anything which he can mention.

It may even follow that although the inherent inclinations of Professor Haeckel may have made it his fate to write and urge this so-called Monistic Religion and Ethics, it will be the fate of others to reject them. It may well be that all the various religions and ethical views of the world and the antagonizing philosophies and sciences are necessary and inevitable, and life and effort therefore reduced to absurdity because fate plays such pranks with its very self that persuasiveness and effort are its most ridiculous expressions.

To what line of heredity, to what moment of circumstances shall we look for the truth? In the light of such a philosphy, what *is* truth?



Chapter X

THE ETERNITY OF INDIVIDUALITY

In a former chapter I have adopted the word "relationship" as being the most felicitous expression of the meaning of individuality, and I have again spoken of the individual as a unit of force, a unity and a form of motion. This is the result of a habit of always considering everything as having polarity and more than one aspect. The Monistic idea is that what ordinarily appears to be two separate things, the operation of mind and the functioning of brain substance, is really but one thing with parallel activities in both aspects.

If we disabuse our minds of the idea that all things had a beginning at the same time, and rather conceive of Eternity as an everlasting Now, we shall perhaps perceive that it is possible that subjectivity and objectivity are ever in existence and that to limit their parallel phenomena is unnecessary and responsive to no imperative demand of Science.

I have stated that all I know of mind or consciousness is gathered from within myself. I cannot possibly have or analyze the consciousness of another; objectivities we may have in common,

but as I retire toward myself, I of course of necessity draw the curtains between myself and others. Hence, when I may happen to apply the words "relationship," "unit of force," "a unity," "form of motion," to something other than myself, I must ask to be excused from asserting whether they are conscious or not. It would be presumptuous to say that they are not, and yet I should be unable to prove that they are. From the position of the living environment which I have postulated my own belief is that we should hesitate at fixing boundaries to sentience and consciousness.

That physically it is comparatively easy to construct a working synthesis we have already seen, and even concerning that unsolved problem of memory I think that the physical operation of it may be tentatively accounted for. Not that I am able to say that it is so, but that for aught I know it is scientifically possible for it to be something like what I shall try to describe. The scheme, however, as we shall see, will fail to account for the sense of pastness felt in the present, which is an unsurmountable barrier to any satisfactory materialistic solution of the mystery of memory.

It has been estimated that in the cortex of the cerebrum alone there are over 1,600,000,000 cells. These are presumably less and less specialized as we approach the periphery and more and more limited and specialized as we sink deeper into the mass. As there is an environment about and outside of us which incessantly bombards us through our senses with unnumbered impulses, so there

may be said to be a constructed environment within us to be filled out with the product of these sensations. Not all these which assail us are the subjects of conscious attention, though a vast number make their impression notwithstanding. There are sixty seconds in a minute, thirty-six hundred in an hour, and approximately fourteen hours in the day during which we may be said to receive an average of such sensations as are received and retained within the field of memory. There are three hundred and sixty-five days in a year, and a man may be fairly considered to carry the capacity for receiving the average of sensations for about sixty years. If every second of such time a new and distinct sensation were to be experienced it is easy to perceive that there is an ample number of cells to allow to each a record of the experience, for we should then receive but about 1,103,760,000 such distinct sensations. If the distinction between the results is a distinctive form of motion among the molecules of the cell thereby causing a change which is fixed and thereafter characteristic, then we shall have an environment within from which to draw at will in a manner similar to that in which we first received them at will, or as is ordinarily the case, against our will.

Such a cell so changed and modified as to its form of motion would when stimulated to a discharge of energy send forth along the nerve track just that form of energy which it was modified by, and no other. It needs only the comparatively undifferentiated, unequilibrated cells which lie

near the periphery of the cortex, to be what they apparently are, the receivers, analyzers, sifters, synthesizers and impermanent reflexes of such sensation from within or without, to partially account for the phenomena of memory from the physical view of it; and I do not see why it is not fully as rational as the theory of phosphorescent gleams by Luys and far more within the bounds of scientific probability.

All this however goes, even if it be reasonable, but a little way toward explaining memory. It utterly fails as do all such schematic explanations, to account for the sense of pastness. It provides and can provide no place for consciousness or perception, and leaves the questions of value and quality of ideas unanswered. And it is this sense of pastness that lends the element of conscious continuity to the individual. Whatever the physical character of the memory, these thoughts and collections of the past come forth from their cloisters hoary with age, and with a mustiness and pathos which belong only to that which is past. What physical explanation can be given for the presence of this quality of pastness, indeed what physical explanation may be given for *any quality* of thought or recollection, from the materialistic position?

This storehouse of experienced sensations is the universe reflected within as we have seen it, felt, heard, understood and lived it, and from it and within it we construct other lives for ourselves and fill them out with combinations of reflected sensations.

I have prefaced what I wish to say upon the subject which heads this chapter with this speculation, merely to prepare the way for the assertion that there is ample reason to consider the physical counterpart of all thoughts and memories to be the set figures produced in specific forms of motion, or rather the capacity of such forms of motion to produce set figures. I think there can be no quarrel over the statement upon the part of the biologists, for without some such assumption biology will be at a loss to account in any manner for heredity. While it must be apparent that from the theory of the living environment which I have tried to present, heredity is only to be considered as finding its place in the composite of that environment and not in the individual; yet, unless we are to stand squarely upon the preformation theory, we must look for the bearers of heredity among the elements of the germ cell and find its potentiality in the modification of forms of molecular motion. Such a form of motion is however a synthesis, is itself a living environment, a unity, and all attempts to find within its expression a unit of life have failed in demonstrating anything except as I have said before, that any portion of it has life of more or less duration according as it has or has not the union of protoplasm and nucleus. To the vast possibilities within its complexity, nobody, but one who is determined to arbitrarily treat it as the unit of life, will close his eyes.

To make my meaning clearer I should write upon the living universe: *"Individuals within in-*

dividuals, ever the one in relation to the many, from the Infinite one to the cell which we study, and beyond."

That the multiplex individualities within any one may be separated and become in turn the dominant force of a unity is evidenced in a great variety of forms among the invertebrates, and this is almost universally true where the units of the congeries are but slightly specialized. That composite forms appear simultaneously with the evidences of individuality is not proof that the individual is the result of the organization and unification. The unification will not be there except the individual is likewise.

The mere fact that the higher powers of the microscope can get no separated individuality beyond the minute cell does not any longer cause my mind anxiety, for the reason that I have been able to perceive enough under such lenses as I can command to teach me the lesson that size is nothing, it is a word of comparison, it is but the measure again of our capacity of seeing. The natural incapacity of the eye to perceive largeness in smallness is a condition akin to that existing, when looking at an object at a distance. Distance is a barrier to sight, and our inability to overcome it except artificially, is an incapacity. It is because of this attitude of my mind that with the stakes which actual Science has driven I allow myself to establish a base of rational operations in surveying the really unknown territory beyond.

As I have said before, this is *my* mental atti-

tude, it satisfies me for the present because I must live in that mind and not in another's.

I have indulged in this little excursion merely to enforce the position I assumed that there is no satisfactory reason for treating the unicell as a unit of life, whatever it may be in relation to the combinations which it forms with others in the composite body. Therefore, any form of motion set up within it would be again the evidence of the one and the many, the units and the unity.

As I sift over the returns from the field of modern physical science, it appears to me most likely that the old theory of hard atoms will be utterly abandoned and matter will be, in its last analysis, the operation of forms of energy in ether or substance; and, as the originating force cannot be known to physics, we must conceive of these as eternal. In the vastness of the thought one bows his head and says: "It is as it is from eternity to eternity"; and, in the field of psychology, I am unable to discover units of consciousness or the alleged reason to assume them; without at least two and a third there is no consciousness, and, as the complexity of the universal substance has been conceived to always exist, this condition must attend all units of force with the resulting relationship;—so we must say again: "It is as it is from eternity to eternity, there has ever been the one and the many, dependent upon each other for conscious being."

To a Science which holds fast to the teaching, "All life out of life," it ought not to be a difficult

thing to accept the consistant idea that the forms of force and the substance in which such energy forms appear to be, are eternal. The use of the word "potential," is as I have before suggested, no escape from the mystery, for there is nothing in potentiality which does not as a form of energy in a medium subsist.

Any conception which we may have of an ultimate eternally existing substance, such as ether, in view of the axioms of Science concerning force and life, cannot be of a motionless, absolutely calm and equated homogeneity, but must be of such a substance pulsating with forms of motion, units of force, eternally. This must be, or there is nothing potential in what fills, as variety, the universe. The scientist, however renowned, who is iconoclastic enough to cut from under humanity its hope and faith in immortality, must sharpen his axe on the grindstone of Science and on that alone. His conclusion that "it is not," is not the equivalent of "cannot be," therefore as I have reiterated, it remains only necessary to stand beneath the shadow of scientific possibilities and suggest any one of the possible avenues open to a rational belief in the eternity of existence.

Let us suppose the individual to be one of those units of force in ether, and therefore eternally an energy form in ether. It is not inconceivable, it certainly is not disproven, that the consciousness of the Infinite One, as we have before suggested, is dependent upon these units of force and form in the substance, and they in their turn upon it for theirs. We need not travel outside of our

own brains and minds for a completely analogous condition.

Without expressing any opinion as to the merit of his work, I may with propriety at this moment quote with approval the conclusions of a gentleman of recognized position in the world scientific, Prof. Flourney. In his recent book, "From India to the Planet Mars," he says: "How is it possible to believe that the foci of chemical phenomena, as complex as the nervous centers, can be in activity without giving forth diverse undulations, X, Y, or Z rays, traversing the cranium as the sun traverses a pane of glass, and acting at a distance on their homologues in other craniums? It is a simple matter of intensity and I confess I do not understand those who reproach telepathy with being strange, mystical, occult, supernormal, etc."

Now I can have no reasons for combatting such a conclusion as this, for I have had some exceedingly interesting experiences in telepathy myself, as a result of a determination to take nothing for granted in a field of phenomena which offered such large chances for delusion, fraud, and superstition. But what is the medium which these presumably diverse undulations are supposed to traverse? Is it the atmosphere? Hardly that, for they seem not to be affected by the storms and tempests, nor halted in their courses by heat or cold. We can conceive of but one medium which will serve for the transmission of such forms of motion, and that is probably the same which conveys the electric undulations in wireless telegraphy, the ether or substance. As a remark in

passing, I may say that this suggests a conceivable cerebral activity to a World Mind; for, after all, the cells of the human cerebrum are not altogether actually connected by their nerve processes, there is, on the contrary, an exceedingly minute space between the plexus terminals to be accounted for over which the varying impulses must travel; and as space is as nothing to the undulations of the ether, one who is gifted with a fairly well equipped imagination could construct without committing scientific suicide, a world brain, of the consciousness of which we could know no more than do the cells and cell centers of our central system of our individual consciousness. Locate as we will the special centers of the brain and specialize as we may the habitat of the specific sensations and ideas, it yet remains a fact, that what is the property of these specialized centers is likewise the property of the individual. As localized they have no value except to specially center, as generalized they become profoundly of value to the individual. They are the property of both, and the relationship between them is one of degree and mutual of course. If, then, these "chemical phenomena" cannot be considered as occurring without giving forth such undulations, which undulations have the capacity, in a medium like that in which they originated, of reproducing as an effect, their cause; in as much as the human brain is incessantly producing such "chemical phenomena," it must logically be presumed to be always surrounded by a sphere of outgoing undulations of ether, prominent among which should

be that produced by the idea of self; for there is nothing which lends so much force to the personal activities as that; it fills all thought with its color and self-consciousness.

Aside from the value which all this must have to the one sea of mind in which the individual is forever a unit of energy, why should it be at all inconceivable that at death, this unit of force, this form of energy, this individual should find itself still at home as the vortex center of the encircling undulations? They, the created; it, the creator. Why should it not adapt itself immediately to its environment and yet live? Indeed it is already in its environment, undulations of ether; the environment which it has itself drawn from the surrounding world. These surrounding undulations are its own, the units which sent them forth, obedient to the law of unity, have not been robbed, they parted with nothing; and as the composite community falls gradually to pieces as such, each unit of force, each form of energy, changes its outward environment carrying with it its internal world.

These undulations of the substance presumably are the equivalents of the energy forms which sent them forth. They occupy a similar relation to them as do the undulations on the telephone wire *en route* from transmitter to receiver to the energy form producing them.

It is a common saying that we have no experimental knowledge of consciousness unassociated with matter, the purpose being to emphasize the assertion that there is no consciousness unassociated with matter; but it is equally true that we

have no experimental knowledge of energy except as associated with matter, or as we perceive its phenomena in matter; but one would hardly assert therefore that energy did not exist except in connection with matter, unless indeed we make no distinction between matter and ether. There are a number of undulations in the ether which are caused by, or evidence of, an energy unassociated with ponderable matter; light for instance.

What experimental knowledge have we of energy except as we have witnessed its action in the phenomena of matter? Its existence is discoverable in matter, and because we also experimentally ascertain that it produces certain effects in different media, and that as its movements are transferred from one form of matter to another they assume different forms, we formulate the statement of the principle of transformation of energy; and because, as is the case with light, which we can only perceive when reflected from some material substance, it may be brought into appearance by the interposition and use of matter, we assume of necessity its existence as energy unassociated with ponderable matter.

Again, because it is impossible for the human mind to conceive of energy disassociated with some medium of transmission, we assume the existence of the ether, or some substance akin to it, call it what we will.

One reason why the scientific, physiological psychologists have had no experimental knowledge of the same character, of consciousness unassociated with ponderable matter but associated

with ether or substance, is because the field of inquiry necessary to be investigated has been until quite recently given over to minds untrained in the weighing of evidence, and therefore whatever of phenomena there have been were labelled "occult," "transcendental," "supernatural," etc., and the evidence of experiences from such directions has been unacceptable and ruled out of court.

As a matter of fact there can be no such thing as experimental knowledge of either energy or consciousness unassociated with matter. The very rules we apply are rules of physics, and the experiments themselves are always made in matter.

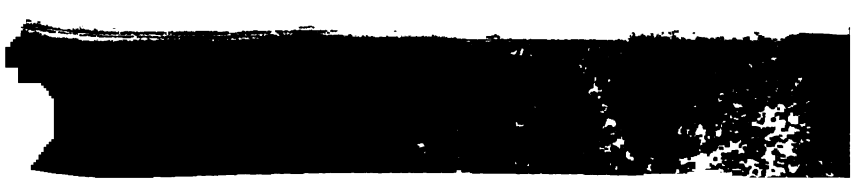
The knowledge we have of energy unassociated with matter is inferential, and a fair application of the same methods to the study of consciousness will result in the same inferential knowledge of it as unassociated with matter, meaning here, ponderable matter as distinguished from its substance.

I need not repeat perhaps what has been so often reiterated in this work concerning the entire scheme, that I do not mean to be understood as taking the position that this discussion is intended to prove that consciousness ever exists unassociated with ponderable matter, but that we should not accept as absolute the statement of scientists that it *cannot*. All we know of consciousness is of our own and that which is reported to us by others. Any report of consciousness is of consciousness associated with matter,

for when a man tells me he is conscious, I know that it is only as associated with him, and that is likewise true of any consciousness which I may infer is associated with animal or physical life of any kind

What I do insist upon is that we know experimentally nothing pro or con about the existence of consciousness in the substance ether. The suggestion that it is a legitimate hypothesis to infer its existence there associated with ether may cause a smile to spread over the face of the truly orthodox scientist, but really that is because of his fixed habit of thought. Heterodoxy is as unpopular and as unprofitable among the members of that cult as among some divines.

There are a few men of scientific attainments who have dared to advance the suggestion that we have no right to limit the possibility of mind to that in connection with which only we perceive it; notably Professor Romanes and Professors Cope and Dolbear, unless I have misinterpreted their writings. Romanes, as I have elsewhere stated, does so in clear, distinct, unmistakable terms; Cope by his statements that, "effort is a conscious state," that "the preliminary of any animal movement is effort," that "life preceded organization," that "consciousness was confident with the dawn of life," and that "energy may be conscious"; and Dolbear when he suggests (and it is fair to state that it is but a suggestion) certain properties of his hypothetical rings in the ether, of which he says: "Now, it is either that theory or nothing" that may "differ from each other not



only in size but in their rate of motion; the ring may be a thin one, may rotate relatively fast or slow, may contain a greater or less amount of ether."

Surely if structure, variety, heterogenity, potentiality of association and synthesis be essential to consciousness, we have in such forms of motion and their evident capabilities all that is necessary as elements of functioning mind and consciousness. True these forms of motion, to the inferential existence of which physical science is decidedly leaning, are assumed to be the ultimate units of force upon which all matter rests as a foundation; but they are not matter, as matter is considered by physical science.

One fact is certain, and that is, that wherever we find the most consciousness in the human body, it is associated with the least equilibrated and most unstable combination of atoms, and that it is submerged and unappreciable as these atoms are found in combination in centers of matter more stable, more equilibrated and material. Is it supernaturalism to suggest that one may follow logically the consciousness into the region of their least stability of compact and ponderable association? It is perhaps pertinent here to say that the atoms of which I write are the energy forms in ether to which I have referred as the probable future substitutes for the hard atoms. The concourse of such atoms bringing into existence by selective synthesis worlds and systems and maintaining them in their specific synthetic motions and forms for untold ages, may be

paralleled perhaps by the concourse of such energy forms as I have conceived sensations, experiences, thoughts, etc., to have set up around and about and as the appearance of the unit of force, the individual, in the ether. If so, the expression of the individual is as real in the ether as in the matter, for matter would then be the mediator between the world and the individual. To admit even that the consciousness of the individual is produced by the chemical activities of the cells of the central system would not force us of necessity to the conclusion that consciousness ends with the cessation of labor upon the part of the cells, for it is not the molar motion of the cell (that is, its motion as a body) which assists in the accretion of material for consciousness, but its molecular motion, the changes of form of motion, not form of cell. We know practically nothing about the changes in energy forms which take place within the cell, and with the fact staring us in the face, that there *must* be most marvellous variety in the forms of motion in the germ cell in order to build up that wonderful compound, the distinguishable, personal body of man with such physical characteristics as mark him as something different from every other man, we should hesitate at attempting to measure the mental activities, the facts of consciousness, with our calorimeters.

This germ cell is the fusion of two, one the sperm, and the other the ovum, both microscopically small. And yet in these the only sensible explanation of their vast potentialities is, that re-

markably complex forms of motion have been set up, in some manner unknown to Science, in their molecules, somewhat akin to those which must be looked for in the cells of the cerebrum as the physical seat of memory, and indeed these forms of motion in the germ cells must be considered as memory forms, else the whole scheme of biology is based on an unsubstantial foundation. A very important question, however, which remains a profound mystery, is: What causes these forms of motion in the molecules of the cells?

Passing for awhile from the suggestion of an etheric composite, if I may call it such, I wish to consider the law of unity and units as applied to this germ cell. I am perfectly conscious that I am about to enter a field of discussion which has been the despair as well as the inspiration of many very able men, but I again repeat that I must think for myself if I am to derive any benefit from their investigations and my own humbler efforts in the same direction, and while I may not hope to accomplish that which others far better equipped for the purpose have failed to do, yet I may be able to show cause for hesitation in framing final conclusions inimical to our peace of mind.

If we substitute for the confusing terms rather simpler English and try to state the facts, we may have some idea of the great puzzle of biology, and how far we are bound by any actual knowledge to retreat from the sunshine of our hopes into the marshes of pessimistic and despairing materialism, or a *soulless* Monism.

It will be conceded that men are not all alike, that they differ one from another both in physical appearance and mental qualities and tendencies. It will probably also be admitted that from the same parents, children with widely different physical and mental qualities are brought into the world.

Why is it so? If you could give answer you would solve the problem which has caused many shelves of my library to be filled with books, books which present explanations as widely divergent one from another as the persons whose varying qualities they endeavor to explain.

Why is it that in one family there will be found the presence of a marvelous genius for music in one child, its total absence in another, and in lieu of it a faculty for mathematics? Why is it that in ourselves there come dripping from the depths of the unknown sea within the flotsam and jetsam of experiences which we never had; suggestions, ideas, developed capacities, for which we never practiced; accomplished results for which we apparently never furnished the causes? What is the reason that some come to the task of life already armed with the weapons of genius?

"Heredity," answers the ready scientist. But what *is* heredity, and how does it come, in what sort of a parcel is it done up in that invisible speck of substance from which we came as to our bodies? And more puzzling yet, how does it happen that from the same microscopic speck so many various divergent inheritances come? This body of mine, that of my brothers and sisters, all

come from the same germ cell. We do not escape that very plain fact by asserting that inasmuch as we were born at different times, we therefore had a different cell origin, for it is evident that each parent was the result of the fusion of two cells into one and its multiplication into the many and that even by the fusion of two in one, we never escape the one. Are the potentialities of many individuals resident in some form within the one cell? If so, then even without adopting the somewhat ancient idea of preformation in the cell, that is, that the form of man lies hid in actuality in it, we are confronted with the proposition that within that invisible speck of matter are the various forms of motion which may determine the product as one of many differing possibilities. Not that there is any differentiation in the various portions of the germ cell which might determine the product as one of a different species, for in the light of the experiments, referred to in another chapter, made with the eggs of a frog, this is not so; but as to what the qualities, characteristics and personal attributes shall be, within the limits of the preformed animal, there certainly is differentiation sufficient to produce marvelous variety as the product of the progeny of the same original cell.

My citizenship in the world entitled me to approach without undue awe a brief discussion of the statements and conclusions of even so eminent a scientist as Professor Haeckel, especially as he has found it convenient to treat with scant courtesy the opinions and beliefs of those who think

differently from himself. Taking him at his own estimate of the value of man's intellect as expressed in "The Riddle of the Universe," we must consider his mental process as but the operation of a machine, and his conclusions but the result of the metabolism of proteids, and that in a machine which is, as he expresses it, approaching the "gradual decay of the physical powers." Now, I do not really believe this, because I cannot place the estimate which he does upon the mental products of mankind, yet I fear that the law governing auto-suggestion does, in the case of one who persistently for years looks upon himself as the phenomenon of chemical processes, ultimately result in just such conclusions.

In his discussion on the subject of Psychic Gradations he informs us that "unconscious memory is a universal and very important function of all plastidules," and that these, "as individual molecules of the active protoplasm, are reproductive, and so gifted with memory, that is the chief difference between the organic and the inorganic worlds." With all but the last clause of this declaration of course I can have no dispute, because it is in accord with the theory of the living environment which I have suggested, but taken in connection with other propositions in Haeckel's work it leads into a blind alley rather than up to his ultimate conclusion. For instance, in replying to Weismann's theory that the protists are immortal, he asserts (p. 190, "The Riddle of the Universe") that in the process of multiplication of the protists by division, the unicel-

lular organism (cell) breaks up into a number of equal parts, each of which leads its own life, and that the very process has destroyed the individuality of the cell, and its physiological and morphological unity is gone.

It is appropriate to call attention to Professor Haeckel's accepted definition of an individual. On page 190, "The Riddle of the Universe," he says an individual is "A unity which cannot be divided without destroying its nature."

Again, on page 63 of the same work, the assertion is made that "with the formation of this cytula" (the united ovum and spermatozoon, which is therefore one cell), "hence, in the process of conception itself, the existence of the personality, the independent individual, commences."

But this independent "individual," which then "commences" its existence, is a single cell, and begins to reproduce at once by fission, and soon becomes not only two, but many more cells. Has its individuality been "destroyed," as to its nature, and what has become of the individuality of the molecules of the active protoplasm? It must be remembered that the study of this process of segmentation is not carried on with the human cell, but with that of the thread worm found in the excretions of the equine race, or in the equally available and transparent ova of the sea urchin, and that in those up to above the eight-cell condition, the cells may by rocking gently be separated, and each department produce a normal animal except possibly as to size. Were there two individuals or more in the stem cell from

which these came? Has the individual been "divided" without destroying its nature? Which of the two in such a case is the "independent individual," or are both?

Before giving expression to the attitude of mind which I am constrained to assume toward Professor Haeckel's presentation of the "sound scientific arguments" against immortality, I desire to show to those who may have been somewhat depressed by the plausibility of his general arguments, the force of which depends largely upon his illy concealed contempt of the intelligence of such as disagree with him, that he is himself compelled to rely upon the mysterious, the unproven, and the unknown in the last analysis of his reasoning. On page 220, "The Riddle of the Universe," he lays down the following theses as his "own opinion": "I. The two fundamental forms of substance, ponderable matter and ether, are not dead and only moved by extrinsic force, but they are endowed with sensation and will (though, naturally, of a lower grade); they experience an *inclination* for *condensation*" (italics mine), "dislike of strain; they strive after the one and struggle after the other. II. There is no such thing as empty space; that part of space that is not filled with ponderable atoms is filled with ether. III. There is no such thing as an action at a distance through perfectly empty space; all action of bodies upon each other is either determined by immediate contact" (immediate contact is puzzling if ether is not continuous in the bodies), "or is effected by the mediation of

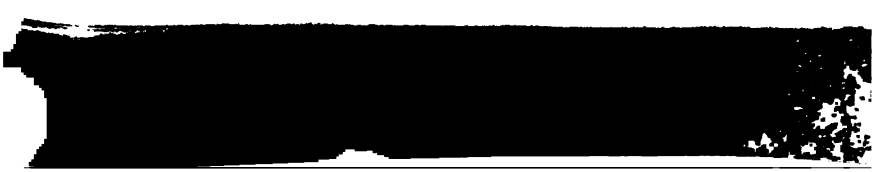
ether." On page 228 we find the following: "The etheric consistency may probably . . . pass into a gaseous state," and "Ether is boundless and immeasurable."

These theses I have no disposition to dispute as a whole, but I am compelled to imagine what takes place when ether condenses into a gaseous condition, for the results of condensation necessitates the thesis that "Ether is boundless and immeasurable." Is it any less of a strain upon our common sense and reason to conceive of "boundless and immeasurable ether" than boundless and immeasurable mind and consciousness? The scientist who demands that we have the known, evidenced by experimental knowledge, as a basis of our belief in the eternity of individuality, must, if he deliver his argument from the mere physical pole, adhere to the same rule. We have and can have no experimental knowledge of the boundlessness of ether. It is purely hypothetical, a necessary hypothesis I admit, but the human mind staggers with awe in contemplation of the thought, just as it does in attempting to entertain the conception of an Infinite Mind which thinks. Yet to this great and learned Professor, the one is rational science, the other puerile superstition.

I insist that if one shall on the contrary commence his solution of the "Riddle of the Universe" from the psychic pole, and inverting the thesis of Professor Haeckel, insist that matter is but the phenomenon of mind, the same character of argument advanced by Haeckel may be made

from that starting point and with equal force and effectiveness. It all depends upon which pole of the Monistic theory we plant our feet as a point of departure. *Why* are we compelled to commence with the material side? Because we have material brains, ganglion cells and nerves? Why, we have also thoughts, ideas, affections, aspirations, memory, and love; why not start with them? But it is said that these only put in an appearance with and disappear with the brain and cells. Yes, but it is equally true that the brain and cells only put in an appearance with *these* and disappear with them.

The apparent fact is that while the scientist is to be allowed to load down a speck of matter with the most marvelous, intricate memories, including not only those of preëxisting vertebrates, vermiformed, fish-gilled and canine ancestors, but the mental and physical qualities of our immediate parents and grandparents, and that remarkable epitome, the memory of the race; the psychologist is not to be permitted to see in all this the possible living environment of an individuality working its way up to an adaption to the world environment, using these as the only organs possible, evolved through countless ages. He, the biologist, is to be allowed to unchallenged demand an acceptance of his limitless ether for which he can offer no experimental proof, while the other is to be ruled out of the arena of common sense, if he find on the other side of Monism a limitless and unbounded consciousness, in which "he lives and moves and has his being."



While the word "Monism" ought not to alarm us in the slightest degree, because there is no real necessity why we should be Monists or that Monism should rule the universe, yet it seems to me that there is an unnecessary abhorrence expressed by Monistic philosophers for anything which appears to them to be dualistic. For instance, I have no doubt but that the suggestion that the individual is a unit of force and the unity of activity in the developing germ cell will be scorned as dualistic. But is it any more so than Haeckel's Monism? I do not insist that it is the truth, although I believe it to be, but that it is true even to the Monism presented in "The Riddle of the Universe." The memories of the cytula come from both parents, says Haeckel: "the ovum contributes a portion of the maternal features, while the nucleus of the spermatozoon brings a part of the father's characteristics."

"We know that in it" (the process of impregnation) "the nucleus of the spermatozoon contributes the qualities of the male parent, and the nucleus of the ovum gives the qualities of the mother to the newly born stem cell." "Heredity is the memory of the plastidule."

Now these inherited qualities are transmitted, presumably, by the setting up of forms of motion of some kind in the protoplasm, and, upon the union of the nuclei of both parents, two outside individuals have directly operated upon this protoplasm by imparting forms of motion caused by their own activities—so far we will be admittedly safely within the Monistic demands of

Professor Haeckel, but how comes it, because we suppose a *third* party to have a hand in setting up the unifying forms of motion in that same stem cell, we have become dualistic? To admit the individual as the organizer of the unity which evolves out of the cell and its division is no more dualistic than Haeckel's heredity.

There is a wide margin in "infinite eternal" force for a force unknown or unrecognized by Science; indeed, the very infinity of force, and its reciprocal action, would be, perhaps I should say could be, the force of forces, the law of laws, the unity of forces, *the* Individual, the One, in which all forces are held, and whose infinity, constancy, and eternity depend upon these units and their relationship! Such an Individual would be God, and it would not be matter but *force.*

What is force? Who knows? We see its presence in matter, but we believe it to be, and Haeckel asserts that it is, eternal and infinite, so we are agreed that it is not matter nor the phenomenon of matter.

Force we know, consciousness we know, and thought we know, but consciousness and thought are no more mysterious and inexplicable in final analysis than force. We believe in the constancy of force, partly because we can trace it in its transformations, yet sometimes it eludes us and we cannot keep the column of figures on the ledger balanced. For instance, I think, and my thought is of "immortality." We may measure the expenditure of energy made by my cells in thinking the thought, but that thought may be

loaded with magnificence, grandeur, devotion, all of which qualities elude the calorimeter with which the measurement was made. Indeed, the thought "immortality" in the denying mind of Professor Haeckel would probably mark the same degree on the calorimeter. The *quality* of thought has one characteristic in common with the individual; it eludes measurement in terms of matter.

Any discussion of Professor Haeckel's chapter on "The Immortality of the Soul" must, of course, recognize the character of Immortality which he is talking about. If he had had in mind only the immortality of the individual when he wrote the chapter, it would be a much more simple matter to defend one's contrary convictions than it is. The chapter discusses theological "immortality" rather than the broad question of the eternity of the individual.

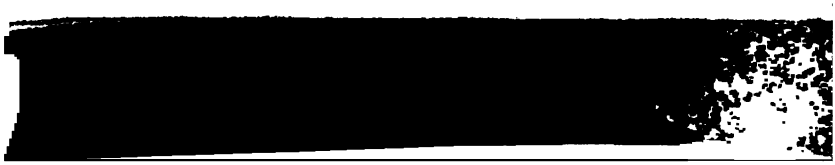
It is not the attitude of a scientific mind to advance "insoluble difficulty" in answering such questions as "in what stage of their individual development the disembodied souls will spend their eternal life," as an argument against the immortality of the individual. That and much more in the many pages of the chapter referred to is but the presentation of reasons for not accepting the theological immortality, reasons which have been offered so many times that they are ancient history. So serious a task as he set himself demanded the discussion of the greater question of whether there is an individual, an ego, a self, a subjectivity, to which this life in the environment of matter on this earth is but a phase,

an event which has its beginning and ending, its rhythmic rise and decline like everything else in the world.

Such a question is large enough for so great a scientist, and he owed it to the mass of struggling, writhing, suffering, starving, dying, but hoping, humanity, for whom he assumed to be the judge of their superstition or otherwise, to have discussed it fully before offering them his charnel house of despair.

To present, even in a masterly manner, the discoveries of how the physical side of man was evolved, a discourse upon the embryology of the "soul" and the Phylogeny of the "soul" after having first defined "soul" as follows (page 89, "The Riddle of the Universe"): "What we call soul is, in my opinion, a natural phenomenon," is, I consider, a begging of the question, for it is a declaration that what he is writing about are the "psychic activities" as they are evidenced in the cells of the brain. As I have suggested elsewhere in this book, there is no added argument in all the modern additions to the subdivisions of the body of a man against immortality. We stand in that respect just where our fathers did, when instead of cells they recognized brain. The dissection of the organs into their minutiæ only adds to the mystery; it does not lessen it. That we do our thinking with millions of cells, instead of a mass of undifferentiated gray substance, brain, lends no added force to the ancient attacks upon immortality.

The meat of the chapter in question, and it



strikes me the only scientific meat to be found in it is on page 204, and I shall make the same suggestion to the interested student of that page that the author (Haeckel) makes in the same work on page 107: "I recommend those of my readers who are interested in these momentous questions of psychology to study the profound work of Romanes." It is true that the work of Romanes to which he was referring was "Mental Evolution in the Animal World," but Romanes wrote several great books, among them "Essays," "Jelly Fish, Star Fish, and Sea Urchins," and "Mind, Motion, and Monism," and it is to this last-named work that I refer. Inasmuch as Professor Haeckel says he is completely at one with Romanes and Darwin in almost all their views and convictions, and that whenever they and he seem to differ it is either because of "imperfect expression" on his part, or the differences are "unimportant," I feel at liberty to quote quite freely from Romanes for the purpose of giving expression to what Professor Haeckel means, supposing the differences to be unimportant. Professor Romanes on page 151 of "Mind, Motion, and Monism" says: "The statement of any causal relation is merely a statement of the fact that both the matter and the energy concerned in the event were of a permanent nature and unalterable amount. Therefore *if* the ultimate Reality is mental causation it *must* be ontologically identical with volition. And that the ultimate Reality is either mental, or something greater, seemed to be proved by the consideration that if it be sup-

posed anything less, there must be an end of the equivalency as between cause and effect, and so of the conception of causality itself; for clearly if my mind has been caused by anything less than itself, there is an end of any possible equivalency between the activity of that thing as a cause and the occurrence of my mind as an effect."

I have quoted this freely because the great Zoologist, whose book, unwarranted I believe as to its claim that its philosophy is demanded by Science, appears to convey the impression that the lamented Romanes held the same views. That I have not made a wrong application is evidenced by the author's (Romanes's) foot note on the same page, as follows: "Whatsoever is first of all things must necessarily contain it and actually have, at least, all the perfections that can ever after exist, nor can it ever give to another any perfection that it hath not actually in itself or at least in a higher degree" (Locke). To this argument Mill answers: "How vastly nobler and more precious, for instance, are the vegetables and animals than the soil and manure out of which, and by the properties of which, they are raised up!" To which Romanes replies: "But this stricture is not worthy of Mill. The soil and manure do not constitute the whole cause of the plants and animals. We must trace these and many other causes (conditions) back and back until we come to whatsoever is first of all things; it is merely childish to choose some few conditions, and arbitrarily to regard them as alone efficient causes."

I must also state that Romanes says that a

"human mind is a part of the self-existing substance, although not on *this account* self-existing as to its individual personality," but to grasp to the full extent the unbiased elasticity of Romanes's argument his whole work upon "Mind, Motion, and Monism" should be read. He claims that personality appears to be the result of circumscription, a limitation, but an integral part of the whole, and there is a generous margin left for God and even the necessary relational existence of the individual in these words: "There is next the fact that throughout the universe of infinite objectivity, so far at least as human observation can extend, there is *unquestionable evidence of some one* integrating principle whereby all its many and complex parts are correlated with one another in such wise that the result is universal order. And if we take any part of the whole system—such as that of organic nature on this planet—to examine in more detail, we find that it appears to be instinct with *contrivance.* So to speak, whenever we tap organic nature, it seems to flow with purpose . . . the world eject thus becomes invested with a psychical value as greatly transcending in magnitude that of the human mind, as the material frame of the universe transcends the material frame of the human body." (" Mind, Motion and Monism," p. 109.)

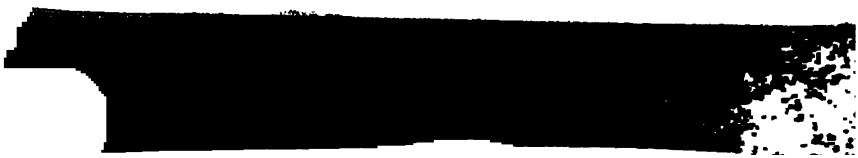
Contrast these words with those of Schopenhauer quoted approvingly by Professor Haeckel on page 231, "The Riddle of the Universe": "The truth of pantheism lies in its destruction of the

dualistic antithesis of God and the world, in its recognition that the world exists in virtue of its own inherent forces. The maxim of the Pantheist, 'God and the world are one' is merely a polite way of giving this Lord God his *conge*."

Far be it from me to express an opinion as to which of these great men is nearest to the truth, but I am of the decided opinion that Haeckel and Romanes are not "at one" on this subject.

As the human mind is an integral part of the whole, then, in view of the "unquestionable evidence" of the one integrating principle, a unity psychism, a psychism so transcending that of the human mind, while I may not be able to subject my relationship in it to such an analysis as will afford scientific proof of its inextinguishable value, I yet have sufficient room in the china shop of Science to exercise a reasonable degree of scientific faith without breaking the valuable china.

Before calling attention to some thoughts which to my mind have been sufficient to alleviate the otherwise depressing influence of the physiological, histological, experimental, and pathological arguments of Haeckel, I desire to refer briefly to the ontogenetic, that is the development of the soul in the individual. Of course, if we are to limit the soul to the mere chemical activities of the cells of the brain, there is nothing to be said, because our agreement to such a meaning of the word would end in similar views as to its development, rhythm, and end. I take it, however, that most of us understand by the soul, that substantial entity, the individual. "We



see," says Professor Haeckel, "the child soul gradually unfold its various powers, the youth present them in full bloom, the mature man shows their ripe fruit, in old age we see the gradual decay of the physical powers, corresponding to the senile degeneration of the brain." It is undoubtedly true that the neuroblasts or undeveloped cells of the infant develop and reach maturity and in old age the same cells become frequently pigmented, shrunken and give other signs of degeneration, and the connections between them are withdrawn, and we have the sad picture of the "lean and slippered pantaloon" condition of man. But because the composite structure is falling, that which was the individual amid the objectivities of the environing material world no longer holds together, does it follow that that for which the mediation existed has likewise fallen into decay? The very fact that it no longer communicates with us or we with it, is the reason why we cannot say it does not yet live; it has no bridge on which to cross to us. Not that I mean to imply that it is something which was apart from and came into the body, *deus ex machina*, but the individual is not *that;* bounded by bodies, existing as and in a living environment; it is not *that.* I decline to accept this senseless, shuffling, incompetent mass of cells, precious as it is to memory and association, as the measurement of the individual whose love shone out of his eyes a few days ago; the unification in that environment is destroyed, and what is left will automatically continue its various specialized

functions until the units are themselves separated. As Verworn says in "General Physiology," the composite body is quite a long time in dying, even after that moment when life is ordinarily pronounced to be at an end. If the Pantheistic scientist can find God in the universe of many, and ascribe "purpose" and "contrivance," and not discover His death in the wreck of changes going on in the phenomena of substance, I see no reason why I may not continue to find the *individual* surviving in the same manner. I stand on the emphatic language, and the thought conveyed by it, of Alfred H. Lloyd in "Dynamic Idealism": "Individuals neither die nor come into being."

The soul, says Professor Haeckel, is a collective title for the sum total of the psychic activities of the cells of the cerebrum, and these are chemical from his standpoint. Somewhere I have read, I think in "Mind, Motion and Monism," by Romanes, that motion can only produce motion, and I am perhaps stupidly puzzled in attempting to understand how thought, affection, love, reason, consciousness, etc., can be produced by the chemical motions of the molecules in the cells in any part of the central nervous system.

The sum total of motions is either equation, no motion, or a synthetic motion, but it certainly is never anything but a resulting motion. If these various qualities of mind are motions, then I insist again that such a Monistic conception furnishes us with no possible individual or soul, if an individual be what Professor Haeckel con-

cedes it to be, a something which cannot be divided without destroying its individuality. That we are marginally conscious of more than one sensation at a time, it appears to me we readily perceive in our own experiences. I hear, see, think, feel, love, etc., all at the same time. These do not follow each other necessarily as successive sensations or emotions, but are present in the moment. Now if the "sum total" is one motion, what motion is it? Notwithstanding the suggestion that it is so plain that it is final and destructive to the idea of any individual soul other—What is it? The "sum total" of our cerebral chemical activities; but is it one, or many; is it a motion, or motions? If a motion and one, it is a motion produced as a "sum total" and therefore something additional to the unit motions, and that is not the Monism of Professor Haeckel. If motions, then we have yet a complexity, and intricacy which in turn needs to be analyzed by the same process.

And again, Haeckel says in reply to Weismann's claim that the protozoa are immortal; the fission of the unicell is by that very process destructive of individuality, because an individual is that which cannot be divided without destroying its individuality. The human body, the brain, the cerebrum thereof, are all composed of separate individual cells, which as Haeckel himself suggests in the argument against immortality are associated in strongly specialized centers. We must therefore reach the curious conclusion that there is no individual to be immortal; in other

words, his logic is destructive not only of immortality but individuality itself.

It appears evident that if *one* cell divided is no longer an individual because so divided, then an ovum cell which has been so divided many million times and specialized in sections, is no longer the individual, which, as Haeckel says in "The Riddle of the Universe," then and there, with the stem cell, commenced. It must have commenced and ended there speedily so that individuality is a commencement of that which never proceeds.

It is no longer a unit but a unity, there are free cells innumerable within it, white corpuscles, etc., which, while they make a community, do not constitute a unit. The human body *dies by piecemeal and it is long after consciousness*, that absolute destruction of the mass follows. (Verworn.)

I insist that there is no scientific evidence that the force, which so holds together these divers units, these specialized chemical activities, as that there is an individual within our consciousness, is a product of those motions; but rather that it is the principle of force, or unit of force, by and through the means of which the union and maintenance of it is rendered possible; and *that*, whatever it is, is the individual or there is *none*.

Where it came from, why it came at all, I do not know, but I do know that while we are indulging in such mighty flights of the scientific imagination into the region of the infinite as that we can assert an ether, which is coeternal with an equally infinite Spirit which can have a sum total,

an ether boundless, undifferentiated, and infinite, but which nevertheless can condense into gases; while we are ascribing to atoms sensation and will, and loading down the invisible spermatozoa and ova with the burden of the race memory and all the other memories necessary to evolve a man; while witnessing such astounding products of the metabolism of proteids as modern education has given us; we need not yet, even at the bidding of the world's greatest Zoölogist, find it impossible or even difficult to include a probable unit of force, eternal, having its life, motion, and being in that One, which transcends even our scientific power of thought.

Let me return to the last discussion, and see if I can make my difficulty in accepting the conclusion of Professor Haeckel a little more explicit.

As I have said, motion produces only motion; and the chemical activities of the cerebral, or for that matter of all the cells of the central system are motions. I can conceive of these interacting motions producing one synthetic motion and I may add that that one motion may be a varying synthesis, that is, it may be now one form of motion and again another form of motion, depending upon the change constantly going on in the unit motions; but if that conception is to be applied to the psychical phenomena, we find ourselves, or at least I find myself in a dilemma. The moment's consciousness, the moment's condition of mind, is not a simple, a single form of motion, conceding it to be a motion. It is quite

the contrary, it is complex, it is composite, it is at once a structure with many details, and unless we find that there is something which is the apex, the perceiver, we have in this *quasi* Monistic machine no room for the individual at all. Of course, if it be asserted that I am not an individual and that there is no such thing, then the consolation that I am but the Infinite experiencing, is sufficient, because as I have endeavored to show in another chapter, nothing can be lost in the great One and I presume that the delusion of myself will find its permanent place.

We know absolutely nothing about the energy coeternal with ether, we *know* nothing about whether it has units of force or not; we have no scientific knowledge on the subject. We may trace the laws of physics scientifically so far only as our experiences go; from there on we reason, we infer, and seek to harmonize the possible with the certain. Nobody is justified in saying that we have in the closing years of the nineteenth century demonstrated scientifically that individuality either begins or ends with its phenomenal appearance in the realm of "condensed ether."

The limitations placed upon human knowledge are tremendous in their inhibitory results, and as an instance of how little we know, and what possibilities lie outside of our scientific knowledge, I may be permitted to present an imaginary scheme for eternity of individuality which I frankly admit I cannot prove, but which I insist cannot be shown to be fatally inconsistent with what we know. Bear in mind that I do not say

it may not be inconsistent with the opinions and conclusions of individual scientists, but only that it is as firmly founded upon our absolute knowledge as any opinions on their part.

Let us suppose the world to be an individual endowed with consciousness, will, and thought. Is this a violent presumption? Not at all. Many of the great philosophers of the past and some of the present time have expressed the opinion that "the world lives, the world thinks." Nor need we be swerved, necessarily, from the assumption, because we walk about and find space, activities and objects, and are able to modify the appearance of the world by our operations, for within myself I can conceive of a phagocyte (white corpuscle) roaming in quest of food and performing his duties as possibly a hunter in the veins and tissues of my body, and refusing to admit that what he lives in is a being endowed like himself with will, thought, and consciousness. He finds space, space as wide and extended in comparison as do you and I in the world. Or to bring the suggestion more closely home, let us consider one of the cells of the cerebrum, one of those the "sum total" of whose activities make up the "soul." Such a cell is exceedingly, incomprehensibly intricate in its internal, molecular motions, so much so that the movements of a Hoe printing press are as a sum in addition to a quadratic equation in comparison—or one of the cells and its associate cells constituting a congeries of cells, a center, say the center of speech in one of the lobes of the brain; there is space between

these cells, they communicate by some vibration, undulation or other form of motion along the substance of the nerves and across space between the plexuses. They have their admitted limitations and specializations just as we have in the world. If I could analyze the consciousness of one of them (and of course I cannot), I might find as much ignorance of the methods by which it communicates with others, as I find among men as to the ways and means of telepathy; or I might go farther and say that it will deny that it communicates at all except so far as it may trace its own force impulses physically.

As we find stated in "Mind, Motion and Monism," by Romanes (and the statement is borne out by other writers equally as scientific), when by injury or destruction the cells constituting the center of speech on one side of the brain disappear, the power of speech is lost. Ideas remain, there is no change or loss in them, but the power to express them in words and sentences is not there. But, in many instances (and one is sufficient for proof), after a while the cells constituting a similar center on the other side of the brain begin to develop the function of speech and eventually the individual regains the use of the faculty. Professor Romanes considered this remarkable, so do I, so I think will you. Ideas usually, I believe, take their place in the stream of consciousness in the form of language—and here we have an individual with undisturbed ideas which labor and struggle for utterance and finally force their way into expression. The

physical expression has departed, but shall we hesitate to say that the consciousness and knowledge of speech was builded into the individual and refinds expression?

What has become of the cells, of their individualities? I do not know and it does not concern me, it is sufficient that that other, the unborn, the relationship, for which the center and cells played their part is not gone; it is there. With the units and unities which make the expression of *the* Unity possible, I have nothing to do.

To return to my relationship to the world, I have long ago, perhaps without reason, disabused my mind of the idea that I stand alone; the space in which I move and which surrounds me no longer appalls me because I find that it is all relative.

Conceive my body, if you will, as a cell in the multicellular world; the intricacy and complexity of it need not deter you, for we have seen that it is not a whit more so than a cortical cell. I may serve physically just that purpose, I perform my function. If the body disintegrates, who shall say that the function, the relationship, that for which I stand, is not built into the world and that my real life is my life in it?

That which I as an individual, not as a mass of cells, stand for, is not in the ponderous expression, not in the cumbersome, composite, living environment, but in the relationship. I cannot be lost; its value is just what it is in that larger individuality, in which it lives and dwells.

To fully comprehend what I mean, we should not specialize but generalize the subject. The law of relationship must be conceived of as extending completely down the line of physical association until we shall have reached what has been supposed to have been discovered, the unit of living substance. With such a conception the question of how the individual first appears, in the germ cell with its wonderfully prepared environment, is no more mysterious to me than how anything else in the world appears where and when it does, for on this theory we are so intimately woven together in *the* life, that to solve that problem would indeed be to give a solution of "The Riddle of the Universe."

Given the assumed ether and spirit of Professor Haeckel, and the conception of the units of force to which I have referred is certainly not a violent presumption, for I have the right to continue to ascribe eternal differentiation to the "Spirit." It certainly is not homogenous and infinite with the inherent capacity to break up or condense like the ether, if so we must look back of even it to find that mysterious capacity or force by virtue of which it condenses in sections or breaks up or starts its various manifestations. A homogenous ether, a homogenous Spirit pervading it even as its other pole would, it appears to me, sleep a dreamless undisturbed sleep and be eternally as immovable as adamant. Either the One and the many were and are in being eternally, or there is, as in fact there seems to be, a point beyond which reason cannot reach. If

ether and units of force eternally, then there is no scientific reason why we should not ascribe to these units of force individuality and differentiation multiplex enough to account for all the manifestation of the Universe. To ascribe to Spirit diversity, differentiation, and individuality, is no more dualism than to postulate eternal and infinite ether and eternal infinite spirit.

Why the fact that any conception of immortality must scientifically include the lower animals should in any manner be considered an argument against it, I do not understand. The Universe does include animals, for we see them every day and what the Universe includes I suppose belongs to it. While we are talking about "infinite" force or spirit we may as well logically include infinite variety of individualities, for that is what makes up the universe. What value the units of force, which appear as animals here and now, may have in the economy of the universe, I do not know, but they seem to have had great value so far in preparing by evolution the opportunity for the physical appearance of man.

Why any question of their value should even be considered by Professor Haeckel, I do not understand, for he has given the "Lord God his *conge*" and there is no need for values. The idea that all individuals should be alike is an unnecessary one in my view, for infinity and eternity are very large and include everything.

Chapter XI

CONCLUSION

As I endeavored to make clear at the commencement of this book, my purpose has not been to present a scientific demonstration of immortality which would be capable without personal evidence, for I fully realize the folly of any such an attempt with our present knowledge, but rather to set forth, as forcibly as my command of language and limited familiarity with the general field of Science would permit, the reasons why I believe the attempt to demonstrate the contrary position to be true to be chargeable with greater folly. The great mystery of life and individuality is as dense to-day under the rays of the rising sun of Science as it has ever been; the Sphinx sits as silent, as immovable, as uncommunicative on the sands of the desert as it has done for countless generations, and man knows experimentally as little about the whence, the why and the whither, as he did in the ages when under Indian skies he reached the summit of philosophic wisdom. It is unfortunate that we are so constituted as that whenever an array of facts presents itself to us in an unbroken line of continuity, we are apt to take it as a rule of measurement for everything else, forgetting the

amazing complexity of nature and the startling surprises which frequently assail us in the form of apparent breaks in continuity. The hidden links which bind together the phenomena are many, are unknown, are only to be theoretically considered and will forever recede from our analysis.

The rational process of Science is to proceed from the known to the unknown by inference; the theoretical process is to come back from the inferred and construct upon it theses concerning other phenomena. Thus, for reasons which I need not give in detail, Science infers the existence of atoms and an infinite ether or substance. Now this is rational. Atoms, we say, must be; they *may* be hard, round bodies, or they may be vortices. Ether must be, it *may* have any of the consistent qualities assigned to it, but when we have assumed necessarily the ether and the atoms, our assumption has not become the basis for a demonstration of any sort. If we return with our atoms and our ether and, using them as a foundation, rear thereon structures other than those from whence (phenomenal existence) we traveled into the region of the unknown by induction, we are theorizing, and theorizing only.

Hence I insist that the laws of substance, of which so much has been said, and upon which so much has been builded, are themselves yet to be proven and demonstrated.

There is a sort of so-called logical destruction of that which is of tremendous ethical value to the world, which proceeds somewhat after this

fashion: "I find *mind* associated with brain; *brain* is composed of elements to be found unassociated with each other everywhere in the universe; there ought to be a substance called ether; these elements are reducible to simple forms of condensed ether; as there seems to me to be no other place from which consciousness and will can come, these forms of condensed ether must have them; they cannot have much of them because *I conceive* of these forms of condensed ether as *infinitesimally small points* and not complex; true, I have never seen these small points or simple forms, but as I cannot account for matter in any other way, they *must* exist.

"I do not believe that there is anything in the universe but this ether and these infinitesimal points of condensation as a last analysis, therefore everything came from their association, all bodies, all differentiation, all mind, even the soul of man; therefore, it is absurd to think that there is any immortality, and any man who thinks so is either in his dotage, or is superstitious, or lacks in the power of exercising sound judgment, or owes it to his early religious training, or has not the gift of pure reason."

Now all this may be true, but it is by no means shown to be so. As we have seen, there is an absurdly small degree of actual knowledge of the properties of ether within the possession of any one, the atoms are as elusive as ghosts and as foreign to positive classification as the canals of Mars. The attitude of Prof. Haeckel toward the ignorance of the qualities and properties of ether

and atoms, on the part of the rest of mankind who yet have a lingering *faith* in the possibilities which may fill the vastness of what they do not know, is akin to that of St. Paul toward the men of Athens when he covered their ignorance with his wisdom by saying: "Him whom you ignorantly worship, Him declare I unto you."

It is not, that, in these days when Science is the king of the realm of thought, such a learned man as Haeckel should not, if he chose, instruct the world with his opinion upon the subject which he deemed of import enough to write about, but that, because of his prominence, he should not have presented it in such a manner as to amount to a declaration that such an attitude as that which he takes is the ultimatum of Science. As we have seen, it is not so; it is far from it; it is only the opinion of Professor Haeckel, based upon his great attainments in the field of zoölogy and manifestly highly colored and seasoned by his undeniable bias for the Monistic philosophy and religion.

Such attitude, if taken prematurely by Science, is, I believe, dangerous to good government, dangerous to character, dangerous to society, dangerous to morals and dangerous to health and peace of mind. Not dangerous because it presents the truth, for mankind can always adapt itself to truth, but because it presents a *guess* as though it *were* a truth, and a guess too which is not calculated to result in uplifting, encouraging or improving mankind, but quite on the contrary calculated to result in shrouding the weak

in hopelessness, and in crowning pessimism king in place of optimism. All this because one great man, who had created a wide avenue of hearing for himself by his remarkable intelligence in certain fields of learning, uses that avenue to present his opinion upon the subject most precious to man, in a form which appears to bear the stamp of approved and demonstrated fact.

Why do I take this attitude toward the book? Why should I not? I have read it; for a moment it staggered me, it grieved me, it inexpressibly saddened me, but not for long; its monument of the known, of the seen, the felt, the measured, the weighted and guaged, stood so insecurely upon the uncertain quagmire of the *absolutely unknown* that it toppled over of its own weight. I found it soon enough to be a projection of lines into the infinite horizon, lines which had but one end, lines which reached to nowhere.

It is a profound presentation of the physical appearance of life, life in ponderable matter; but in every direction, without exception, the known shades off by degrees to the unknown, the immeasurable and possibly the unknowable, leaving the sensible man to rely yet upon his inner consciousness and frame his faith upon the data as he shall find them appealing to him as rational.

Of all the attempts of encouragement of man as an ethical being, made by the materialistic and some of the so-called Monistic moralists, that is the saddest which suggests that the individual is nothing, the race everything. That it is the duty of each to so live that the race will advance in

happiness, prosperity, culture, morality, etc., etc. This sort of pabulum may feed the minds of those who present it to others, but aside from the actual compensating pleasure with which one rewards himself for virtue, there is no reason why life under such a theory should not take its full swing regardless of the future and those who are to fill it. Why is the race everything? Why *is* there a race at all? What particular advantage is it to me that a race of any beings should survive my absolute disappearance? These questions cannot be answered to the satisfaction of any except such as have been so environed as that love, plenty, culture, education, music, art, science and prosperity have come and come to stay.

To such the maintenance of morality is a necessity and the preservation of the race, inasmuch as it necessitates the careful preservation of that which fills their lives, is worthy of their effort and fully rewards them. This is the reasoning usually of the cloister, the library, the university, but rarely, if ever, of the city, the field, the crowded, sweating, foul, noisy, contentious, competitive and suffering swarms of human life.

The struggle of life is for the *individual!* The individual is *everything; it* is as much a race as that vast concourse of men and women usually so named. It is no less and no more an absolutely essential factor in the life of the Universal One. Is there any community more emphatic than I find in myself—any, where the struggles are more frequent or more violent—any, where the call for

equity, ethics, and culture are louder and more imperative?

To do my demanded duty to the race, and the race of men, is to perform loyally and cheerfully the function which as a comparative unit I must perform from the necessities of my relationship to it, just as I demand of those which stand beneath me as the units of my unity to perform theirs to me.

Therefore I insist that the preservation, the persistence of the individual has as much of value in the economy of the universe as that of the so-called race.

Socialism has no saving grace, except it be always directed in purpose to the development of the individual.

Either all this is true, or the whole race life is purposeless and empty and should aim at ultimate suicide of society rather than the preservation of the meaningless holiday parade of advancing civilization.

The acceptance of such an ultimate conclusion as Professor Haeckel announces, as the product and the only product of pure reason, as a fact, as an undeniable, proven result of the century's progress in Science, would start a new era with the undoing of all that has been accomplished in centuries of ethical progress.

Human life has achieved a value which the ancients rarely admitted, the shedding of blood has become more abhorrent, the preservation of the lives of the suffering, the amelioration of poverty, the kindly care for the insane, the education

of the deaf, dumb and blind, have all become matters of great interest and more or less successful achievement, and why? Because mankind has come to recognize that there is something more to a human individual than the "chemical activities" of the cells of the cerebrum. There has been developed an active sympathy for the suffering of dumb brutes, and laws for the prevention of cruelty to them promulgated and enforced.

To abandon this conception of the value of the individual, as something more than his mere economic availability to society, would result in an abandonment of the useless additions to the burdens of government. The protection of human beings from the dangers of contagion from diseases would, under such a system of belief, justify the wholesale extinction of populated centers, the painless destruction of life, and the merciless application of stringent laws for isolation. Why should the lame, blind, paralyzed, tuberculous and witless be allowed to persist in living? Why burden ourselves with the insane and criminal? Why not weed the earth of the incompetent? The natural operation of the law of the survival of the fittest is far too slow, it can be materially assisted. The aged and senile may be gently passed out of life and the world move along much more easily and untrammeled.

This is the logical outcome of such a view of life, and any attempts to relieve the situation by soft language about the adoration of the beautiful and sublime in nature is folly. If love is but the chemical affinity which Haeckel asserts it to

be, it is an empty delusion and the beautiful and sublime resolve themselves into nothing but a dance of atoms. We have for centuries been building up as the essential vitality of our civilization elusive, lying, evanescent, fictitious shadows and labeling them "heart" and "soul."

If we are to commence the work of uprooting the spiritual, the "superstitious," the soulful, the individual, and selfhood, we must make a clean sweep and carry with them all which has grown in the soil of those gardens. They are illusions, they are courtiers attendant upon the king of delusions, the soul. Evolution was side-tracked centuries ago, and the sooner we find the main track the sooner we may take that desirable plunge into the abyss of anarchy and confusion.

I have heard the charms of such a (Monistic?) philosophy delightfully expressed by others than Professor Haeckel, but to any but the contented and prosperous, the healthful and happy, they have the odor of the charnel house and the hopelessness of hell.

I am quite aware that these are strong words, but I am searching for strong words, words powerful enough to express my personal condemnation, not of an expression of the truth, but of an expression of a theory upon such a vital matter, in a manner which leaves the impression upon the human mind, that the *theory is scientific fact.* Such a negative theory, if it be a fact, can never be shown to Science as such, for Science never yet has found an ocean whose last wave it has measured, never a form of substance which